

**DEPARTMENT OF DEFENSE AUTHORIZATION FOR
APPROPRIATIONS FOR FISCAL YEAR 2002**

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES

UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

ON

S. 1416

AUTHORIZING APPROPRIATIONS FOR FISCAL YEAR 2002 FOR MILITARY
ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CON-
STRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF
ENERGY, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL
YEAR FOR THE ARMED FORCES, AND FOR OTHER PURPOSES

PART 2

SEAPOWER

APRIL 4, 26, JUNE 7, JULY 31, 2001



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**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2002**

WEDNESDAY, APRIL 4, 2001

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

**SHIPBUILDING INDUSTRIAL BASE ISSUES AND
INITIATIVES**

The subcommittee met, pursuant to notice, at 9:32 a.m., in room SR-222, Russell Senate Office Building, Senator Jeff Sessions (chairman of the subcommittee) presiding.

Committee members present: Senators Sessions, Warner, Smith, Collins, Bunning, Lieberman, Landrieu, and Reed.

Committee staff members present: Anita H. Rouse, deputy chief clerk.

Professional staff members present: John R. Barnes, William C. Greenwalt, Gary M. Hall, and Thomas L. MacKenzie.

Minority staff members present: Creighton Greene, professional staff member, and Peter K. Levine, minority counsel.

Staff assistants present: Kristi M. Freddo, Jennifer L. Naccari, and Michele A. Traficante.

Committee members' assistants present: Margaret Hemenway, assistant to Senator Smith; Arch Galloway II, assistant to Senator Sessions; Kristine Fauser, assistant to Senator Collins; Menda S. Fife, assistant to Senator Kennedy; Frederick M. Downey, assistant to Senator Lieberman; and Elizabeth King, assistant to Senator Reed.

OPENING STATEMENT OF SENATOR JEFF SESSIONS

Senator SESSIONS. Good morning. Today the Seapower Subcommittee convenes to explore shipbuilding industrial base issues and initiatives. I am very pleased to be able to work with the Ranking Member, Senator Kennedy, with whom I have talked about this hearing but could not be here today. We are delighted that Senator Lieberman will serve as the Ranking Member of this subcommittee today, as he has served on the subcommittee for a number of years. Also Senators McCain, Smith, and Reed will return to this subcommittee. We welcome our new subcommittee members: Senators Collins, Bunning, Landrieu, and Carnahan.

We look forward to working in a bipartisan manner as this panel has in the past to address the seapower procurement and research and development issues. As we all understand, our decisions directly impact the equipment our men and women of the Armed Forces will have as they carry out the national security strategy. Navy ships are vital to our national security, and the shipbuilding industrial base is the means of providing those Navy ships. Ships are critical to projecting American power.

Today we face many challenges regarding the industry. Reduced funding is exacerbated by reports of schedule delays and increased costs. This committee has to ask the hard questions to determine if these reports are accurate and, if so, the cause of these problems and possible solutions to prevent reoccurrence.

Today we hope to explore and clarify the following questions regarding the challenges we face together with respect to building quality and complex ships. Is there adequate research and development in ship construction funding for the complex ships that are needed by the Navy? Is there enough Navy ship construction work to maintain the industrial base? Are there initiatives including funding alternatives which could reduce the costs of Navy ships? Is the shipbuilding industry controlling the costs of Navy ships and taking initiatives to improve efficiency and reduce costs to the taxpayer, while also providing capable ships? Are there ways to minimize the reported cost increases and schedule delays associated with some Navy ship construction programs? How can design and construction costs be predicted and controlled?

To answer these and other questions presented by Members, we have a distinguished panel of witnesses today representing the six major shipyards which build most of the Navy's ships.

Mr. William Fricks is the chairman and CEO of Newport News Shipbuilding. We were delighted to be there recently with the *Reagan* carrier. That was a great ceremony, Mr. Fricks. Mr. Jerry St. Pé is the chief operating officer of Northrop Grumman's Litton Ship Systems. Mr. John Welch is the General Dynamics senior vice president for the Marine Systems Group. Gentlemen, we welcome you and thank each of you for appearing today.

[The prepared statement of Senator Sessions follows:]

PREPARED STATEMENT BY SENATOR JEFF SESSIONS

Today the Seapower Subcommittee convenes to explore shipbuilding industrial base issues and initiatives. I am very pleased to be able to work with the ranking member, Senator Kennedy, who has led this subcommittee in the past and has maintained a bipartisan approach to national security issues. I would like to welcome Senators McCain, Smith, Lieberman, and Reed back to the subcommittee and welcome our new subcommittee members Senators Collins, Bunning, Landrieu, and Carnahan. I look forward to working in a bipartisan manner, as we have in the past on this panel, to address the Seapower procurement and research and development issues. As we all understand, our decisions directly impact the equipment our men and women of the Armed Services will have as they carry out the national security strategy.

The shipbuilding industrial base is vital to our national security. Why is this the case? Simply put, because Navy ships are vital to our national security. Navy ships are forward deployed on a daily basis to deter potential adversaries while reassuring friends and allies. The Navy and Marine Corps team are often the initial response to crises throughout the world. This is the case because Navy ships can move rapidly to an area without prior approval of foreign governments. The Marine Corps and Navy team create the conditions that ease the entry of joint forces when re-

quired. The Navy maintains freedom of navigation on the high seas which is critical to our economy and our national security.

What are the risks associated with not having the ships to be forward deployed and not being able to assure freedom of navigation throughout the oceans of the world? To answer that question let's look back at the effects of the 1973-1974 oil embargo. The embargo resulted in a loss of 14 percent of the world's oil supply which caused a 4 percent decrease in U.S. employment, a 48 percent devaluation in the S & P 500 stock market index, and a 6 percent decline in Gross Domestic Product in the U.S. In addition to the transit of oil tankers across the oceans, 99 percent of the volume and 84 percent of the value of all intercontinental trade travels by sea. This intercontinental trade, reflective of what is referred to as a global economy, requires access to 16 super ports and transit through nine choke points throughout the world.

In addition to ensuring free transit on the oceans of the world, Navy ships are vital to the concept of joint military operations. This is because the Navy and Marine Corps team in Navy ships develop an understanding of the battlespace while providing a visible show of force to deter aggression and, if necessary, an immediate response to a crisis. These actions require no prior approval of a foreign government and no strategic lift. Navy ships also project defense ashore allowing embarked Marines and then joint forces to secure points of debarkation for follow-on forces.

Construction of Navy ships requires unique skills and facilities. The complexities of building Navy ships require close coordination between designers, constructors, integrators, and operators. The Navy's ability to estimate, negotiate, contract, and manage ship construction programs is largely dependent on information provided by shipyards. Recently, the Navy has put more of the design responsibility in the hands of industry. The results, thus far, are mixed. There have been successes as well as disappointments. While cost and schedule estimation differences have normally been accommodated by the Navy and the shipbuilder, the resulting agreements often have negative effects on other ship building and non-related programs.

The reduction in shipbuilding budgets has led to the reduction in the number of shipyards that build Navy ships, the consolidation of the remaining shipyards, and a reduction of the vendor bases supporting the remaining shipyards. Today there are six shipyards owned by three corporations that construct most of the Navy's ships. Low Navy ship construction rates have limited the government's ability to provide the number of ships required to attain price reductions which would result from quantity buys and contractor competition. Attempts by shipyards to diversify and broaden their customer base by building commercial ships as well as Navy ships has met with mixed results for a number of reasons. There have been instances of directed procurement to maintain the industrial base required for national security.

In the previous 2 years, this subcommittee has gone to great lengths to establish the annual shipbuilding investment required to maintain a Navy of about 300 ships. The Navy, Department of Defense, and the Congressional Research Service agree that an annual investment of \$10 to \$12 billion to build an average of 8.7 ships per year is required for the next 30 years to maintain about 300 ships.

As far as the total number of Navy ships go, the operational commanders have testified that the present ship force structure of about 315 ships is not enough to carry out the present national security strategy. The administration's strategic review, coupled with their national security strategy, will provide fresh data points to evaluate the total ship requirement.

It is not my intention, in this hearing, to debate whether the annual investment requirement should be a little more or a little less or whether the total ship requirement is adequate. Rather, it is my intention to concentrate on how the government, working closely with industry, can get the most out of the shipbuilding investment regardless of the actual amount appropriated and authorized.

Today, we face many challenges regarding the shipbuilding industry. Reduced shipbuilding funding is exacerbated by reports of schedule delays and increased costs. This committee has to ask the hard questions to determine if these reports are accurate and if so, the cause of these problems and possible solutions to prevent reoccurrence.

Today, we hope to explore and clarify the following questions regarding the challenges we face together regarding building quality and complex ships:

1. Is there adequate research and development and ship construction funding for the complex ships that are needed by the Navy.
2. Is there enough Navy ship construction work to maintain the industrial base required to produce the Navy ships that are required?
3. Are there initiatives including funding alternatives which could reduce the cost of Navy ships?

4. Is the shipbuilding industry controlling the cost of Navy ships and taking initiatives to improve efficiency and reduce cost to the taxpayer while providing capable ships?

5. Are there ways to minimize the reported cost increases and schedule delays associated with some Navy ship construction programs?

6. How can design and construction costs be predicted and controlled when there is no viable competition?

To answer these and other questions presented by members, we have a distinguished panel of witnesses today representing the six major shipyards which build most of the Navy's ships. Mr. William Fricks is the Chairman and CEO Newport News Shipbuilding, Mr. Jerry St. Pé is the Chief Operating Officer of Northrup Grumman Litton Ship Systems, and Mr. John Welch is the General Dynamics Senior Vice President for the Marine Systems Group.

Gentlemen, we welcome you and thank each of you for appearing today.

Before we begin the testimony, I'd like to recognize Senator Lieberman for any opening statement on behalf of our ranking member.

Are there any other Senators wishing to make opening remarks?

Gentlemen, in the absence of any objection, your complete statements will become part of the subcommittee's hearing record. Mr. Fricks, please begin.

Before we begin the testimony, I would like to recognize Senator Lieberman for any opening statement he may have.

STATEMENT OF SENATOR JOSEPH I. LIEBERMAN

Senator LIEBERMAN. Thank you, Mr. Chairman. Senator Kennedy regrets that he cannot be here today. I am honored to have the opportunity to sit in for him. I would ask that an opening statement of his be submitted for the record at this time.

Senator SESSIONS. We would be pleased to make that a part of the record.

[The prepared statement of Senator Kennedy follows:]

PREPARED STATEMENT BY SENATOR EDWARD M. KENNEDY

Thank you, Mr. Chairman. I want to join you in welcoming our witnesses to the hearing this morning. I look forward to hearing your testimony.

This is the first hearing of the Seapower Subcommittee this season. I would like to take this opportunity to congratulate you, Mr. Chairman, on assuming the duties of the chair this year. I am looking forward to continuing the close working relationships that we have maintained in this subcommittee through the chairmanships of Senators Cohen, Warner, and Snowe.

I believe that you have identified a good series of hearings for the coming year, which should provide the basis for producing a comprehensive report from the subcommittee. I very much look forward to working with you this year.

I believe that the fundamental problem that we must deal with in this Subcommittee is achieving the proper level of modernization to support tomorrow's readiness. We cannot in good conscience ask more of our forces when we are not willing to provide them the tools they need to protect our vital interests.

The focus of today's hearing is on the shipbuilding industrial base. We are most interested in hearing what suggestions our witnesses can offer on the most effective ways in which we can provide the ships the Navy needs in its fleet.

Thank you again, Mr. Chairman, for calling this very important hearing.

Senator LIEBERMAN. I agree with everything you have said, and maybe I will quote from Senator Kennedy's statement, which is the fundamental problem that we must deal with in this subcommittee is achieving the proper level of modernization to support tomorrow's readiness. We cannot in good conscience ask more of our forces when we are not willing to provide them the tools they need to protect our vital interests. I could not agree with that more.

The forces of technology are affecting shipbuilding as they are every other facet of our lives, and they affect those who threaten our security. We have an obligation to make sure that we provide

the absolute best for our forces and for our Nation. The reality is that no matter how much we work and occasionally succeed in making the Pentagon more efficient, there is no cheap way to do this. We are going to have to invest to maintain the security that a great Nation like ours requires and deserves.

Gentlemen, you are ideally suited by not only position but experience and knowledge to advise us on exactly the terms that we ought to meet to fulfill our responsibility to provide for the common defense. Ancient terms, but terms that we try to apply today in a very modern high tech context.

So I thank you, Mr. Chairman, for convening this hearing, and I thank the three of you for coming. I look forward to your testimony.

Senator SESSIONS. Thank you, Senator Lieberman.

Senator Bunning, any comments?

Senator BUNNING. Thank you, Mr. Chairman.

STATEMENT OF SENATOR JIM BUNNING

Senator BUNNING. Thank you all for coming before this subcommittee today. I am going to keep my remarks brief so that we can hear what you have to say.

Personally, I am very concerned about this country maintaining a viable naval construction infrastructure that will allow us to maintain our position as the leading naval power in the world. Under the current naval construction rate, our Navy will soon have fewer—I say fewer—than 300 ships. I believe this is insufficient to maintain our commitments around the world.

Finding the resources to adequately fund the necessary ship construction rate is going to be a challenge, due to budget realities, but it is hard to imagine any more pressing need than our national security. In the meantime, I look forward to hearing your opinions on what you can do to hold down the costs and make sure that the taxpayer gets the biggest bang for their shipbuilding buck. Thank you, Mr. Chairman.

[The prepared statement of Senator Bunning follows:]

PREPARED STATEMENT BY SENATOR JIM BUNNING

Thank you, Mr. Chairman. Gentlemen, I would like to join my colleagues in welcoming you. We all appreciate your lifelong service to this country.

The state of our sea services is something that greatly concerns me. The United States has always been a maritime nation and this has not changed. It is vital to our national security that we remain capable of projecting power to any point on the globe. Our naval forces are a vital part of that capability. They provide a flexibility not found elsewhere. I am looking forward to working with all of you to ensure our naval forces can meet our Nation's national security requirements.

Senator SESSIONS. Thank you.

Senator Reed.

STATEMENT OF SENATOR JACK REED

Senator REED. Thank you very much, Mr. Chairman. Let me simply welcome the panel and say how much I look forward to their comments this morning and yield back the time.

Senator SESSIONS. Thank you. I would just concur with Senator Bunning's comments that at the rate we are building, it appears that we will be below a 300-ship Navy, and no matter how efficient

and capable these ships are, it is a big world. If one is in the Gulf it cannot be in the Pacific. You simply can not be in two places at once. We need to analyze what is happening. I do not believe that this Senate or this government is in a position to alter fundamentally its ways of doing business, but there may be opportunities for us to utilize our funding procedures and contracting procedures in a way that would allow you to produce more for less, and that will be one of the issues that we will be talking about today.

Senator Collins, we are glad to have you. Would you like to make any comments before we begin?

STATEMENT OF SENATOR SUSAN COLLINS

Senator COLLINS. Thank you very much, Mr. Chairman. I just want to say that I am very pleased to be a new member of the Seapower Subcommittee and to be joining the subcommittee in its important work under your leadership, and I look forward to hearing the testimony of our witnesses today. I want to associate myself with the comments that you and others have made to express my concern about the current low rate of shipbuilding, and the concern that we are moving away from the goal of a 300-ship Navy at a time when many experts believe that that number is inadequate.

I am also very concerned that at the current low rate of production, the costs for ships will go up and the efficiency at the various yards may go down because we will not have maintained the skilled work force and know-how that we need to produce ships productively and efficiently.

I have a lengthier opening statement that I would ask be included in the record, and I appreciate the opportunity to comment this morning.

Thank you.

[The prepared statement of Senator Collins follows:]

PREPARED STATEMENT BY SENATOR SUSAN COLLINS

Thank you Mr. Chairman. Today, the committee will hear testimony from three distinguished professionals who help to ensure that our uniformed men and women have the most advanced and best equipped ships in the world. I want to start by thanking each of you for coming here today to discuss the very important topic of shipbuilding and the issues, challenges, and initiatives that you face in the industry.

Seapower is among the most essential components of our national security posture. However, with that said, the U.S. Navy has shrunk from a fleet of 594-ships in 1987 to 315-ships today. While, during the same period, deployments have increased more than 300 percent. Regional Commanders-in-Chief have repeatedly warned that the fleet is stretched perilously thin and needs to be increased to 360-ships to meet their present mission requirements.

The new administration and this Congress will be faced with the challenge of rebuilding and re-capitalizing the Nation's naval fleet. The numbers are just as clear as can be; at the present rate of investment our Navy will grow smaller and by the 2010 time frame the numbers are quite alarming.

Numbers do matter; on a typical day about half the ships in the Navy are at sea, with one third deployed in the Mediterranean, the Persian Gulf and the Western Pacific, putting wear and tear on our ships and sailors. In addition to combat over the last 10 years, naval forces have conducted: 19 non-combat evacuation operations, 4 maritime intercept operations with more than 5,000 boardings in support of United Nations sanctions or U.S. drug policy, 32 humanitarian assistance operations, and 20 shows of force to send powerful messages to friends and foes alike.

Even though our deployments are at exceptionally high rates, the U.S. shipbuilding industry is at risk of deteriorating if the current build rate for the Navy continues. At the current low rate of production, the cost for ships will go up and the efficiency at the yard may go down.

In response to the decline in funding for Navy shipbuilding in recent years, it has been suggested the Navy make greater use of funding mechanisms other than the traditional full-funding method. Included in these alternatives are multi-year procurement, incremental funding, advanced procurement, and most recently the Navy is evaluating a new mechanism which they refer to as advance appropriations. Each of these alternatives are intended to help provide stability and credibility in the current shipbuilding process. I hope to hear from each of you what you think the pros and cons are of each of these proposed alternative funding mechanisms and any other alternative mechanisms that have, at this time, not yet been considered and should be.

A few other critical areas that have seemed to get little attention in a budget constrained environment is research and development, and training. I look forward to hearing what research and development investments that you have each made at your various yards and the approaches that you have taken to attract and retain a highly-skilled workforce necessary to build the complex warships required for our U.S. Naval ships to operate against the emerging and traditional threats in the 21st century.

Recently, everyone has been consumed with trying to predict what a new military strategy might mean. I would advocate that regardless of the result of the strategic review, forward deployed combat power will not only be required, but will continue to be a key element to our strategic posture. There is an enduring and emerging return on the investment when our Navy's ships command the seas, provide U.S. sovereign power forward, assure access, and project and transform the current naval fleet to prepare for the 21st century.

I again thank you for your presence here today, and I anxiously await your candid assessments of the critical issues facing the shipbuilding industrial base; the factors contributing to the current costs of our Navy ships and the various funding alternatives; the research and development investments needed to be made to remain competitive and efficient; and any other business considerations that you feel need to be brought in the forefront for discussion. Thank you, Mr. Chairman.

Senator SESSIONS. Thank you. Well said.

Mr. Fricks, you lead us off. I am glad to hear from you.

**STATEMENT OF WILLIAM P. FRICKS, CHAIRMAN AND CHIEF
EXECUTIVE OFFICER, NEWPORT NEWS SHIPBUILDING**

Mr. FRICKS. Mr. Chairman and members of the subcommittee, we are pleased to appear before you this morning to discuss the issues confronting the industrial base. I have submitted a formal statement in advance and ask that it be included for the record.

Senator SESSIONS. We will, and all statements will be made a part of the record without objection.

Mr. FRICKS. Thank you.

First let me point out that I believe that currently the shipbuilding industrial base is surviving, but it is struggling. The quandary for shipbuilders today is that, as we have talked about already, the Navy stated a need for 300 to 360 ships. That is the equivalent of 10 to 12 ships per year, yet we continue to build about half that many. So our challenge—the industry's challenge—is whether to invest in a program to upgrade facilities for twice that workload, or continue to retrench to build the number of ships that are actually being authorized each year.

For us to realistically assess the future of the industrial base, we need to know obviously how many ships are going to be built, and what kinds of ships are going to be built. I also know you are interested in hearing about cost control and the predictability of current shipbuilding programs.

First, let me talk about the touchstones of a successful shipbuilding program which can be reduced to about three important fundamentals. The first is the stability of production which allows for the planning of both facilities and work force. The second is the

stability of design which firmly defines the product being built without having to go back and make costly changes. The third and final fundamental is a reasonable cost target which allows for the planning of the entire program and provides incentives for continued performance improvements.

Now let me say this—in my 35 years in the shipbuilding business, I have never seen a program at Newport News, or in fact at any of the other yards, lose cost control when these three fundamentals were in place.

Today you will hear me repeat a very critical word, and one I am confident you will hear from the other shipbuilders—it is the watch word of our industry, and the word is stability. We need stability to strengthen and improve both the industrial base in general and the individual programs. We need a commitment from the government to define and stay the course with Navy shipbuilding programs. One of the ways to do this was mentioned earlier through alternative funding mechanisms. These various alternatives such as multi-year, advanced procurement, block buys, and advance appropriations all support the first fundamental of a successful shipbuilding program, a commitment to stability.

What these alternatives allow us to do, to varying degrees, is to let the shipbuilders plan ahead, invest ahead, and buy several ship sets of material at once, all of which help reduce the costs of building ships. Advance appropriations are more in line with how business finances its capital programs, which is on a cash outlay basis. For example, when we build a new dry dock, we will approve the entire project but budget the costs over the future years when they are expended. By using this approach, shipbuilders can build more ships over the next 5 or 6 years and certainly build them at reduced costs, and therefore I fully support it.

Now I want to touch briefly on some of the Newport News programs, starting with the aircraft carriers. We are currently building the *Ronald Reagan* that you mentioned, Mr. Chairman, which is about 60 percent complete. This includes a completely redesigned island using the most modern tools for 3D product modeling. It will be delivered to the Navy in 2003. Now, there have been some press reports about *Reagan* costs, so I would like to briefly address that subject. We expect the *Reagan* will be delivered to the Navy within about 3 percent of the contract price. Much of this variance comes from the impact of a lengthy strike at Newport News, resulting in increased labor costs.

The next carrier in line, the transition ship to the new class of carrier is CVN-77. This ship will have a newly designed warfare system. In previous carriers, system integration of the warfare system was performed by the Navy. For CVN-77, Newport News, in conjunction with Lockheed, is performing this role.

At this juncture I would like to briefly highlight what I believe is a very important success for both the Navy and for Newport News, and that is the recent contract negotiations for CVN-77. Newport News and the Navy, I believe for the first time as far as I can remember, have agreed to a fair and reasonable target cost. It is important to note, however, that for us to meet that goal, Newport News still has to further reduce its man hours on CVN-77 by about 10 percent, compared to CVN-76. We feel this goal,

while challenging, is achievable given the investments we have made in new information technology and manufacturing systems.

This contract also has a stable design and a stable production plan. In short, all three of the fundamental ingredients required to have a successful program are now present for CVN-77. It should be a model for the future.

Newport News is also working on the first new class of carrier, CVN-X. This ship will have a newly designed propulsion system that will help reduce manpower costs. The second ship in that class is slated to have a newly designed hull. Much of the work on future carriers will take place in a \$60 million carrier integration center funded by the state of Virginia. This center, located in downtown Newport News, is scheduled for opening this summer. It will serve as a nucleus for carrier research, design, testing, and integration with emphasis on improving performance and reducing costs.

With regard to the submarine programs, the teaming, as I am sure Mr. Welch will tell you, on the *Virginia*-class, is progressing very well. The lead ship in the class, *Virginia*, is 50 percent complete, and is scheduled for delivery in 2004. The second ship, the *Texas*, is 40 percent complete and slated for a 2005 delivery.

This summer Newport News will deliver a quarter-scale model of the *Virginia*-class submarine, called LSV-2, to the Navy. This test vehicle will provide the Navy with the opportunity to conduct large-scale testing that will be invaluable to technology development and insertion in a very cost-effective manner.

Another very important element in shipbuilding is our supplier base for materials. Both submarines and aircraft carriers have thousands of different suppliers from all over the country. They range from the very large corporations to the very small businesses. The down turn in defense spending and the lack of follow-through on proposed shipbuilding programs has dealt many of these suppliers a critical blow. In many cases, the industry is down to single-source suppliers, and we remain concerned about our dependence on select suppliers of complex equipment and components.

A month ago Newport News was proud to christen U.S. carrier *Ronald Reagan*. This ship, when it enters the fleet in 2003, will be the most modern, flexible and survivable ship capable of projecting American power and presence around the world for the next 50 years. This ship is a tribute to the skilled workers of both Newport News and our suppliers and, importantly, this ship is indicative of the quality that the U.S. shipbuilding industrial base delivers, in spite of some of the handicaps it is under.

In summary, Mr. Chairman, the Navy shipbuilding industrial base faces many challenges, but we are working hard with our customer to meet them. We know that we can reduce the cost of building Navy ships, but to get there we need to allow for early planning and integration of the design and construction to minimize the number of changes, increase the production rates, and stabilize production schedules and funding. I look forward to working with you and the members of the subcommittee as we all seek to reach these goals. I thank you and look forward to responding to your questions.

[The prepared statement of Mr. Fricks follows:]

PREPARED STATEMENT BY WILLIAM P. FRICKS

Mr. Chairman, and members of the Subcommittee, I am pleased to appear before you this morning to discuss issues confronting the shipbuilding industrial base. In addition, your staff has asked that we cover a broad range of topics from individual shipbuilding programs to more general issues such as the supplier base, the role of commercial shipbuilding and alternative budgeting and funding approaches for Navy shipbuilding. I will touch briefly on each of these and then be prepared to answer your questions.

The current condition of the shipbuilding industrial base is that it is surviving but struggling. The quandary for shipbuilders today is that the Navy has stated a need of 300 to 360 ships which is the equivalent of 10 to 12 ships per year, yet we continue to build about half that many. So the industry's challenge is whether to invest in a program to upgrade facilities for twice the workload or continue to re-trench to build the number of ships that are actually being authorized each year. In order to realistically assess the future of the industrial base, it is critical to know how many and what kinds of ships are going to be built.

Another area that has a particularly high level of interest for the committee is cost control and the predictability of current shipbuilding programs.

The touchstones of a successful shipbuilding program can be reduced to three fundamentals. The first is stability of production, which allows for the planning of both facilities and workforce. The second is stability of design, which firmly defines the product being built without having to go back and make significant and costly changes. The third and final fundamental is a reasonable cost target, which allows for the planning of the entire program and provides incentives for continued performance improvements.

In the 35 years that I have been in the shipbuilding business, I have never seen a program at Newport News, or in fact at any of the other yards, lose control of costs when these three fundamentals were in place.

Throughout this testimony, you will hear me repeat a very critical word and one I'm confident you will hear from the other shipbuilders. It is the watchword of the industry. The word is stability. We need stability to strengthen and improve both the industrial base in general and the individual programs. We need a commitment from the government to define and stay the course with Navy shipbuilding programs.

With those three fundamentals outlined, let me discuss some of the other areas of interest.

First, let me address the subject of productivity improvements. Many of you have heard about the low cost shipbuilding in Japan and Korea. I have been there many times. We have worked with their companies and we have walked their factory floors and their dry docks. There is no mystery to their low cost model. They have stability in production. They have stability in design. Because of that, they can invest heavily in their plants and in their up front planning. These investments pay large dividends in reducing costs. Although the ships they build are almost exclusively commercial, and not as complicated as military warships, the model works for both.

The U.S. shipbuilding industry stands ready to make those same kind of investments once it becomes clear we have a dependable future market. That is not to say that this industry has not invested in itself. Newport News has invested more than a billion dollars in the last 12 years. These investments, in computer-aided design, robotic manufacturing and new facilities, have enabled us to substantially reduce the man-hours required to build carriers and submarines.

You asked about the impact of ship funding alternatives. These various alternatives, such as multi-year funding, advance procurement, block buys, and advance appropriations, all support the first fundamental of a successful shipbuilding program—a commitment to stability. Therefore I enthusiastically support them.

What these alternatives do to varying degrees is allow the shipbuilder to plan ahead, invest ahead and buy several ship-sets of material at once—all which help to reduce the costs of the ships.

Advance appropriations are more in line with how business finances its capital programs, which is on a cash outlay basis. For example, if we build a new dry dock, we will approve the entire project but budget the cost over the future years when it is expended. It is certainly worthy of careful consideration. Therefore I hope the Senate will not agree with the House Budget Resolution provision that would deny Congress the flexibility to consider the use of advance appropriations for Navy shipbuilding. Using advance appropriations, shipbuilders can build more ships over the next 5 or 6 years and certainly build them at reduced costs.

Some of these ship funding alternatives can be used in combination with each other and there are various levels of savings that can be realized, and because there are pros and cons to each of them, I won't get into any more detail at this point. We can save that for questions and answers if you desire.

In addition to the more general issues I have discussed thus far the subcommittee staff has also asked that we address some specific questions.

First, can commercial shipbuilding serve as a reliable means to preserve the industrial base? My general answer is no. Because of the subsidies overseas, the world commercial market is not available to U.S. shipbuilders and the domestic market is not that large. It can, however, be an important supplemental and therefore be of some help to maintaining the industrial base, albeit a small one. Additionally, the most logical place for that work to take place is in the two yards that build military ships that are closer to the design of a commercial ship, products such as the auxiliary ships built for the Navy.

You also inquired about the teaming on the *Virginia*-class submarine program and whether there were lessons-learned that could be applicable to other programs. With respect to the *Virginia*-class submarine program, it is our view that the Electric Boat/Newport News Shipbuilding teaming agreement is an unqualified success.

Despite skepticism by some in the beginning, the Electric Boat/Newport News teaming has resulted in the Navy getting the best both companies have to offer. We have demonstrated that the two companies can seamlessly share and utilize electronic design and construction data, while incorporating the best practices of both companies into the construction process.

The Subcommittee staff has specifically asked if lessons learned from the teaming agreement can be incorporated into other programs, and I think there may be that opportunity. For example, this teaming between two fierce competitors has matured the *Virginia*-class program to the extent that it will be ready for multiyear contracting soon. The teaming agreement provides for a discrete work split between the companies so that each performs separate yet identical work on every boat. This means that each company has essentially one learning curve on its half of the work, rather than both companies having a separate learning curve on the entire boat.

The EB/NNS teaming agreement is also a true partnership with financial incentives in which both partners stand to gain equally if both perform well, and in which both partners stand to lose equally if either performs poorly. It remains to be seen whether the benefits to the Navy from the EB/NNS teaming agreement can be captured in other shipbuilding programs that do not have such a partnership structure.

I will now address the specific shipbuilding programs, starting with aircraft carriers.

We are currently building the *Ronald Reagan* (CVN-76) which is about 60 percent complete. This ship includes a completely redesigned island using the most modern tools for 3-D product modeling, and other changes that resulted in reconfiguring almost two-thirds of non-electronic design drawings of the *Nimitz* class carrier. It will be delivered to the Navy in 2003. The company is also designing and accelerating construction on the transition ship to the new class of carriers. The as yet unnamed CVN-77 will have a newly designed warfare system and unlike previous carriers where this integration was preformed by the Navy, Newport News is managing the technology insertion with Lockheed Martin in a subcontractor role.

Here I would like to briefly highlight what I believe is an important success for both the Navy and for Newport News. That is the recent negotiation for the CVN-77 contract. Newport News and the Navy, for the first time probably in 30 years, agreed to a fair and reasonable target cost. It is important to note however, that to meet this goal Newport News has to further reduce its man-hours on CVN-77 by nearly 10 percent compared to CVN-76. This goal, while challenging, is achievable. We also have a reasonably stable design and a stable production plan. In short, all three of the fundamental ingredients required to have a successful program are present for CVN-77. It should be a model for the future.

Newport News is also working on the first of the new class of carriers, CVNX1. This ship will have a newly designed propulsion system that will, in effect, reduce manpower requirements, thereby saving money. It is also scheduled to have an electromagnetic launch system for aircraft. The second ship of the new class, CVNX2, is anticipated to have a newly designed hull as well as an electromagnetic aircraft recovery system.

Much of the work on future carriers will take place in the new \$60 million Virginia Advanced Shipbuilding and Carrier Integration Center located in downtown Newport News, Va. Scheduled for opening this summer, this Center will serve as the nucleus for all carrier research, design, test and integration. Eleven Virginia colleges and universities, as well as industry partners and the Navy, will participate in this Center.

With regard to the submarine program, I have already mentioned how well the teaming on the *Virginia*-class is progressing. Newport News and Electric Boat have exchanged two modules thus far and will exchange the third later this month. The lead ship of the class, *Virginia*, is 50 percent complete and scheduled for delivery in 2004. The second ship *Texas*, is 40 percent complete and slated for a 2005 delivery. This summer, Newport News will deliver a quarter-scale model of the *Virginia*-class submarine, called LSV-2, to the Navy. This autonomous test vehicle will provide the Navy with the opportunity to conduct large-scale testing that will be invaluable to technology development and insertion in a very cost-effective manner.

A very important element in the shipbuilding industrial base is the supplier base for materials. Both submarines and aircraft carriers literally have thousands of different suppliers from all over the country. They range from very large corporations to very small businesses. The downturn in defense spending and the lack of follow-through on proposed shipbuilding programs has dealt many of these suppliers a critical blow. In many cases, the industry is down to single source suppliers. We remain concerned about our dependence on select suppliers of complex equipment and components.

Like the prime shipbuilders, these suppliers have based their business models and manufacturing capabilities primarily upon Navy shipbuilding programs. In a U.S. economy driven by growth in technology and services sectors, it is doubtful that new manufacturing companies will emerge as alternative suppliers, given the shrinking military opportunities. In addition, it is unlikely that even the more established companies can, over time, make the plant investments necessary to keep up with improvements in manufacturing technology and practices unless they see stability in the shipbuilding programs. As with the shipbuilders, the remaining sole source suppliers struggle to maintain skilled employees and capabilities given the gaps in contract awards and low order quantities.

A month ago, Newport News was proud to christen the newest carrier, *Ronald Reagan* (CVN-76). This ship, when it enters the fleet in 2003, will be the most modern, flexible, and survivable surface ship capable of projecting American power and presence around the world. This ship is a true tribute to the skilled workers of both Newport News and our suppliers. Importantly, this ship is indicative of the quality that the U.S. shipbuilding industrial base delivers, in spite of some of the handicaps it is under.

The industry can continue to reduce its costs and cycle times but there must be stability in shipbuilding and a commitment from the government for these programs to effectively make these kinds of improvements.

In summary, Mr. Chairman, the Navy shipbuilding industrial base faces many challenges, but we are working hard with our customer to meet them. We know that we can restrain the costs of constructing Navy ships by allocating sufficient time and resources to the early planning and integration of the design and construction processes, by reducing the number of changes in ship designs, by increasing production rates, and by attaining stable production schedules and funding.

I look forward to working with you and Members of the Subcommittee as we all seek to reach these goals.

Senator SESSIONS. Thank you, Mr. Fricks. We are glad to be joined by Senator Smith and Jerry St. Pé of Northrop Grumman, Litton Ship Systems. We are glad to hear from you, Mr. St. Pé, at this time.

**STATEMENT OF GERALD ST. PÉ, CHIEF OPERATING OFFICER,
NORTHROP GRUMMAN LITTON SHIP SYSTEMS**

Mr. St. Pé. Thank you very much, Mr. Chairman. I am new to Northrop Grumman. Just yesterday Northrop Grumman acquired our company, so I am struggling myself with trying to figure out who I am and how I should say who I am.

Thank you Mr. Chairman and the members of the committee for providing us this opportunity this morning. Clearly what you have on the agenda are critical issues facing this industry. I know that those of us who are on the industry side of the partnership to build and maintain ships recognize that Congress, as representatives of the taxpayers, also have a responsibility to balance the needs for

defense against the costs of producing the assets. I commend you for the role that you have in that partnership.

I, too, like my associates here have submitted a detailed testimony for the record. This morning what I would like to do is focus the few minutes that I have on the issue of stability, recognizing that the other points that are of interest to this committee are contained in my formal statement. I will do that in the interest of time.

Building Navy combatant ships is a very expensive process. As Bill Fricks has just articulated, and I'm sure John Welch will as well, I think we all agree that there are three key factors that contribute to stability in this industry: a stable long-term shipbuilding program, adequate numbers of ships in the plan to fully utilize America's shipbuilding capacity, and a commitment on the part of shipbuilders to improve efficiency and productivity through investments in shipbuilding processes and technology.

Recent history paints a clear picture that the most affordable way to achieve the fleet size the Navy needs at the lowest possible total program cost is to allow mature shipbuilding programs to continue at a stable pace without interruption. The Navy and its industry partners in the Aegis shipbuilding program, with the support of Congress, clearly demonstrated the value of program stability in the production of 27 CG-47 Aegis class cruisers, and that performance is continuing today in the DDG-51 class destroyers which Ingalls Shipbuilding and Bath Iron Works are building today for the United States Navy.

Just using my own company's work in the Aegis program since 1982 as an example, Ingalls has sent 33 Aegis ships into the fleet, 19 cruisers and 14 destroyers. Those 33 ships were completed at a combined 170 weeks ahead of the original contract schedule with a savings to the taxpayers of more than \$600 million. As impressive as these results are, I can tell you firsthand, as I know Bath Iron Works can, they were not achieved without early challenges in both the cruiser and destroyer programs. At the bottom line, these two programs became industry standards for acquisition and program management because we—the Navy and industry team—are allowed to work and address those challenges in a sustained production run.

Additionally, a major portion of the credit for the Aegis program's success goes to the program stability provided by the Navy and the fiscal responsibility and stability provided by DOD and Congress.

Let me take a few moments to explain what I mean by program stability and fiscal responsibility. If you look back at every first-of-a-class, non-nuclear surface combatant ship produced over the past 30 years in this country, not a single one of them was built to the original contract schedule, or to the original cost estimate. I do not cite that statistic as an excuse for any performance today. Cost growth has ranged from 14 percent to 200 percent, and schedule growth has ranged from one-third to three-fourths higher than the original estimate. While these are indeed sobering statistics when viewed in the context of how ships are procured, they depict a reality that must be faced as we move forward.

More than in any other industry, the cost and schedule estimates we provide in a competition for a lead ship contract are just that—

they are our best estimates based on what we know at the time. Over-optimism by the Navy, Congress, and industry often produces unrealistic cost and schedule estimates for a first-of-a-class vessel. Estimates done in cases many years before the first ship in the class, starts production in our shipyards. Why are these estimates so fragile and so often understated? Very simply because there are no prototypes in shipbuilding, not even when you consider some of the critical important computer simulations and modeling work which we are doing today, some of which Bill Fricks just shared with you with regard to the carrier work.

There are no competing concept fly-offs in shipbuilding. The first ship built to every new design, the lead ship of every new class of Navy warships, would be considered in every other industry a test bed or prototype, a research and development platform. That is not the case in shipbuilding. Instead, in shipbuilding the first ship built, the prototype, is as much a part of the fleet as the last ship in that class, and it has to be built to take our sons and daughters in harm's way. That is a cold, simple fact of life in shipbuilding, as is the length of time it takes to design and build these ships—4, 5, 6 years after the estimate is originally established. This working prototype factor must be taken into account in discussing ways to improve the acquisition process for ships. We must take a long-term approach such as the approach that was successfully applied in the building of Aegis cruisers and Aegis destroyers at Ingalls Shipbuilding and Bath Iron Works over the past 15 years. We absolutely must recognize that large, front-end investments can only be recaptured and maximized by allowing programs to run uninterrupted with sustained levels of program and financial support.

Let me now apply these points to a lead ship under construction in our Avondale shipyard today—the only non-nuclear surface combatant lead ship in process today in this country. Ingalls Shipbuilding, in partnership with Bath Iron Works and Avondale, have an alliance that is at work today designing and building LPD-17. U.S.S. *San Antonio* is currently the only first-of-a-class non-nuclear surface combatant being designed and built today. Are there cost and schedule problems? Absolutely. Are there concerns? Yes, indeed, there are. Are these concerns being addressed? Absolutely and without exception.

I will submit to you the two programs that industry and the Navy now describe as models of efficiency. The Aegis programs I discussed earlier, underwent many of the same challenges that are being experienced at Avondale and at Bath today as we work hard to get the first-of-a-class ship underway. As this was the case with CG-47 and DDG-51 at Ingalls and Bath, and DDG in which these programs relate directly to the challenges of building a first-of-a-class.

However, on LPD-17, the Navy, industry and Congress, collectively took on additional challenges in the way we decided to design this ship, the way we decided to build it, invest up front and reduce life cycle costs. Some critics might suggest that the program today represents a glass half empty. I suggest to you, based on facts and progress, that that glass today is half full and it is getting fuller by the day as this alliance works to bring this program in.

I know that we are making progress, and I will tell you that we may have taken longer to get where we are, we may have taken longer to get where we want to be, and we are clearly not where we wanted to be in the mid-1990s when this ship was first proposed. However, the LPD-17 program is well underway, and I can tell you directly that we are now seeing the benefits of those efforts and the benefits of those investments.

By early fall the ship's design will be complete, far earlier in the construction process than previous first-of-a-class ships in terms of the completion of designs. I say that from a position of experience. No shipbuilding company—no alliance as is represented today by Litton Industries and General Dynamics—has designed or built more lead ships in the history of America, and we have the experience to bring this one through as well.

The quality and completion of design is proving to be superior and is resulting in far less rework than otherwise would be the case. Concurrent with the design process, the Avondale Alliance has reduced total program life cycle costs by more than \$4.5 billion, and that is a Navy estimate, one with which we in industry concur.

Today the construction of LPD-17 is ongoing. A keel was laid in December, and Bath Iron Works will begin the construction of LPD-19 in July. By the end of this year, nearly 1,500 shipbuilders in Maine and Louisiana, as well as people working with sub-contractors across this Nation, will be engaged in building LPD-17. We have much work left to be done, but I can tell you that it has the full commitment of my company, and I know it has the full commitment of the Navy as well as the full commitment of my partners, Bath Iron Works and General Dynamics.

I submit to you that the LPD-17 program is facing similar challenges to those programs of the past, and that today represent the very, very best that this industry knows how to do.

Mr. Chairman, I think my time has run out. I look forward to your questions on this subject and any others that the committee may have on its mind today. Thank you very much.

[The prepared statement of Mr. St. Pé follows:]

PREPARED STATEMENT BY JERRY ST. PÉ

INTRODUCTION

Thank you, Chairman Sessions, Senator Kennedy, and distinguished members of the subcommittee for giving me this opportunity to testify on behalf of two of the six major shipbuilding facilities remaining in this country, and, more importantly, to do so on behalf of the 17,000 men and women of Litton Ship Systems, the newest operating sector within the Northrop Grumman Corporation. Litton Ship Systems includes Ingalls Shipbuilding in Pascagoula, Mississippi, and Avondale Industries, in metro New Orleans, Louisiana, and other locations.

This morning, I will discuss with you key programs and issues important to Ingalls and Avondale, as well as give you our Company's thoughts on a number of issues relating to this Nation's shipbuilding industrial base, and the way the U.S. Navy buys and maintains its surface combatant fleets.

Litton Ship Systems was initially formed in August 1999, following the acquisition of Avondale by Litton Industries. By joining Avondale with Ingalls, Litton combined two of the strongest, most diverse shipbuilders in the country. In addition to having similar histories and capabilities, the two shipyard facilities are in close proximity (approximately 100 miles) and both are strategically located on the Gulf of Mexico, providing opportunities for optimizing shared and specialized services to a much greater extent than other major shipbuilding companies.

In March 2000, Litton further strengthened the team by creating the Litton Ship Systems (LSS) Full Service Center as a focal point for full service contracting, in

response to the U.S. Navy's Full Service Contracting initiatives. The LSS FSC is now a one-stop source for support to naval and commercial shipbuilding programs throughout all phases of a program and a product's operational lifetime. All of the individual efforts previously underway at Ingalls and Avondale in research and development, integrated logistics and fleet support were moved into the single FSC organization.

Already, the three Litton Ship Systems companies have identified hundreds of millions of dollars in merger synergy savings and expect to identify much more as we continue to enhance our shared services concepts within Northrop Grumman. These savings will be passed along to the government in the form of savings on existing programs and lower bids on new programs. These savings will come from a broad range of opportunities, including combined material procurement, combined marketing, common financial and engineering tools, shared work and a stable work force, optimal use of geographically-close facilities, sharing of best practices, a combined approach to capital improvements and sharing of lessons learned.

Two examples of this synergy are that within a few months of the Ingalls-Avondale merger, Ingalls began filling production requirements for Avondale by fabricating certain steel modules for Avondale's Sealift Ship Program; and when Ingalls' Project America cruise ship construction got underway last summer, Avondale stepped up to the partnership by producing a significant amount of the hull stiffeners and t-beams required for this project.

The total employment of Litton Ship Systems is approximately 17,000 with current revenues of \$2.2 billion and backlog of more than \$6.5 billion.

The acquisition of Litton Industries by Northrop Grumman, finalized on Monday, is the most recent step in an ongoing consolidation of the defense industry, will significantly strengthen our ability to compete in an environment where the way in which the Navy procures ships is changing significantly. This acquisition will result in a much stronger competitor for all non-nuclear, surface ship programs and services and will generate significant savings for the American taxpayer.

CURRENT PROGRAMS

The DDG-51 Aegis Destroyer program underway at Ingalls is a mature program, running very smoothly, resulting in a highly capable and affordable warship being delivered by Litton Ship Systems at a rate of about 1.5 ships per year. To date, 24 DDG-51s have been awarded to Ingalls, many of these through multi-year procurement authority granted by Congress. We recently completed our 14th of these ships. The program has been made even more affordable with the use of multi-year procurement, shared processes and material purchasing between Ingalls and Bath Iron Works, close government-industry teaming and a stable production rate of at least three ships per year divided between Ingalls and Bath Iron Works. The proposed reduction in the DDG-51 procurement rate to two ships per year in fiscal year 2002-2004, and the end of this highly successful program in fiscal year 2004—well before the Navy plans to begin building DD 21s—gives us great cause for concern in the areas of affordability, skill retention and optimal facility utilization.

We believe that a minimum procurement rate of at least three ships per year until DD 21 construction begins is essential to the successful introduction of the DD 21 Program at both Ingalls and Bath Iron Works at the least cost to the taxpayers.

Since 1998, Litton Ship Systems has been funded and actively participating in the follow-on destroyer program to the DDG-51, the DD 21 program. The unique acquisition approach has Ingalls as leader of the DD 21 Gold Team—with Raytheon Corporation as systems integrator—and as co-leader of the DD 21 Alliance, with Bath Iron Works. The competition has been intense, and the investment of time and people has been significant. The result will be a revolutionary ship design produced in an affordable and stable manner by this country's two premier surface combatant shipyards.

The DD 21 Program is essential to bringing to the Surface Navy the latest and best technology, warfighting improvements and quality of life for our sailors that industry and government can provide. We urge your continued strong support for this program.

Ingalls is now completing the 7th LHD, U.S.S. *Iwo Jima*, which will join the fleet this summer. Over the past 3 fiscal years, Congress has provided a total of \$856 million for advance procurement, detail design and advance construction of LHD-8. Included in the LHD-8 design will be new gas turbine propulsion, electric auxiliaries, and a number of other improvements to reduce manning and life-cycle costs, and to improve war fighting capability.

The gas turbine modification alone will enable the Navy to reduce LHD-8's crew size by about 90 personnel, and will result in the elimination of more than 3,000

valves in the ship's propulsion system. These reductions, along with the more efficient combination of gas turbine and electric propulsion will result in over \$300 million in life cycle cost reductions.

We look forward to obtaining the remaining funding for this ship, and to starting construction soon. We appreciate the support of this committee for the approach we suggested 3 years ago for building this ship in a timely manner, saving the Navy and the taxpayers hundreds of millions of dollars and providing timely replacement for our aging LHA fleet.

Because both the industry and the Navy see LHD-8 as an excellent transition toward future amphibious assault ships, we are concerned about budget-driven plans to move the next "big deck" amphib out beyond fiscal year 2006. Indeed we believe the Navy/Marine Corps team would be better served by procuring the next ship in fiscal year 2005, while it can take full advantage of the "hot" production line at Ingalls working on LHD-8, which will also save the taxpayers hundreds of millions of dollars.

The Avondale Alliance of Avondale Industries and Bath Iron Works is also involved in a major Amphibious Ship effort with the 12-ship LPD-17 program. These highly capable ships replace 41 older ships and will introduce significant reductions in life cycle costs. The Navy's acquisition strategy for these ships specifically called for an unprecedented level of engineering completion prior to construction start—using a unique three-dimensional design tool and Integrated Product Model—as a way to reduce the cost of design changes and rework. Indeed, over \$4 billion in reductions to total ownership costs have already been identified and designed into the ship. However, delays in developing this new and unique "design/build" process led to removal of funding for the fifth and sixth ships in the program during fiscal year 2001.

I am here to tell you today that most of the obstacles have been overcome—both to our satisfaction and to that of our customer. The design is about 80 percent complete, and we laid keel for the first ship in February, so this program is now well underway, with sustaining levels of production.

Full funding, therefore, of the two fiscal year 2002 ships is essential to keeping this program on track, to avoiding a costly break in production, and increased acquisition costs. The aforementioned military shipbuilding programs, and other critical future programs such as T-AKE and JCC(X), form the core of ship programs at Litton Ship Systems, but are not sufficient to operate our facilities at optimal levels. We have pursued successfully additional core commercial programs that capitalize on the expertise at Ingalls and Avondale and that contribute to stabilizing the business base, retaining skills and generating significant commercial expertise at both facilities. We are building cruise ships at Ingalls and tankers for the Alaska oil trade at Avondale—the first of which has completed sea trials and will soon begin operations on the west coast.

Let me point out that our cruise ship programs would not be possible without DOD's former MARITECH Program, now known as the National Shipbuilding Research Program, or NSRP, which enabled Ingalls to learn about and observe cruise ship building practices around the world, as well as develop teaming relationships with those companies who truly know how to design and build large cruise ships. We strongly support NSRP, and encourage its consistent and full funding.

These and future commercial programs being pursued aggressively by Litton Ship Systems are critical elements of our overall strategy to maintain stability in production, retain skills and apply commercial lessons to improve our overall efficiency. They also reduce overhead expenses for our Navy customers. For this reason, it is critical that MARAD and the Title XI ship loan guarantee program remain in place.

Finally, Litton Ship Systems continues to pursue aggressively foreign military programs throughout the world. The Defense Export Loan Guarantee remains a powerful potential tool to aid in successfully winning international programs to produce and modernize surface combatants.

MAINTAINING THE INDUSTRIAL BASE

In addressing some of the specific issues before this subcommittee, let me start by saying that we all know that building Navy ships is, and will always be, an expensive business. Clearly, though there are ways that we in industry can partner with our customers—which in my mind includes not only the U.S. Navy, but Congress as well—to remove some of the current obstacles to improving productivity and cost efficiency.

It should be said up front that the maintenance of a healthy shipbuilding industrial base that can produce ships at the lowest cost to the taxpayer depends on three key factors: A stable, long-term shipbuilding plan; adequate numbers of ships to uti-

lize efficiently the shipbuilding capacity we have; and a commitment on the part of shipbuilder to invest in shipbuilding facilities, processes and technology.

While program instability—particularly in the areas of funding and scheduling—are unhealthy for Ingalls, Avondale and all other shipbuilders, the management of Litton Ship Systems and Northrop Grumman would be derelict in our responsibilities to the Nation—and our shareholders—if we allowed ourselves to get into a “do or die” situation with one program. The recent industrial base study Congress required of DOD last year painted a somewhat bleak picture of the situation at Ingalls. The study focused only on surface combatants, and while we are very concerned about the DDG-51 building rate and transition to DD 21 production, we have been aggressive in bringing other kinds of work to Ingalls to help stabilize overall employment levels.

We do, however, remain concerned about the erosive impact on specific critical skills in our yard associated largely with construction of surface combatants. One lesson we have all learned in the past is that once highly skilled technicians, such as combat system test engineers, leave our workforce, they do not come back. Commercial products just don’t require many of the highly technical skills required in building surface combatants.

That said, recent history paints a clear picture that the most affordable way to achieve the Fleet size the Navy needs, at the lowest possible total program cost, is to allow mature shipbuilding programs to continue without disruption.

The Navy and its industry partners in the Aegis Shipbuilding Program, with the support of Congress, clearly demonstrated this in the production of 27 CG-47 Class cruisers, and continue to prove this theory in the production of DDG-51 Class destroyers. Just using our own company’s work as an example, since 1982, when we delivered CG-47, Ingalls has sent 33 Aegis ships into the Fleet—19 cruisers, 14 destroyers. Those 33 ships were completed a combined 170 weeks ahead of schedule, with savings to the taxpayers of more than \$600 million. Much of the credit goes to the program stability provided by the Navy, and the funding stability provided by DOD and Congress.

I can tell you today that we have the same opportunities for success in the LPD-17 Program, in future DDGs as a bridge to the DD 21 Program, and in big deck amphibians, if we exercise the program and fiscal responsibility required to start these programs on time, and to continue them uninterrupted to completion.

Let me take a moment to explain what I mean by program and fiscal responsibility. If you look back at every first-of-a-class ship procured over the past 30 years, I can assure you that you won’t find a single one of them that was built to the original contract schedule, or to the original cost estimate. Cost growth has ranged from 14 percent to above 200 percent; and schedule growth has ranged from one-third to three-fourths.

Taken out of context, these would be very sobering numbers. But a number of factors influence this reality, some of which the government is addressing in acquisition reform efforts.

First of all, procurement environments historically encourage unrealistic cost estimates. Sticker shock is bad . . . competition is good . . . realistic competition is better.

Further, over-optimism by the Navy, by Congress, and by industry, often produces unrealistic schedules for first-of-a-class vessels. Remember, ladies and gentlemen, we’re not building cars, airplanes or furniture. There are no prototypes, other than some of the amazing computer simulation and modeling work we’re doing these days . . . there are no competing concept “fly offs”. The prototype of a ship class—the first one built—gets sailed into harm’s way by America’s sons and daughters.

That is a simple fact of life in shipbuilding. So is the length of time it takes to build these ship—4 years for an LHD or LPD, 3 years for a DDG.

We all simply must take these factors into account in discussing ways to improve the acquisition process for ships. We must take a long-term approach, such as was successful in CGs and DDGs, and we absolutely must recognize that large, front-end investments can only be recaptured and maximized by allowing programs to run uninterrupted, with sustained levels of program and financial support.

Now, I would be doing a disservice to thousands of small businesses around the Nation if I didn’t also express my concern about the impact that budget and program instability have on the hundreds of suppliers and subcontractors around the Nation . . . companies that build our pumps, motors, elevators and other components. These are the people who can’t just change product lines and diversify at a moment’s notice when Congress or the Navy decides to delay a program or change a funding profile.

Certainly the shipbuilding industry is doing its part by maintaining world leadership in implementing shipbuilding technology to improve productivity and reduce

costs. We have spent more than \$450 million in our two shipyards over the last decade—including a nearly complete \$130 million one-time investment at Ingalls over the past 18 months—to ensure that we have the most modern, most diversified facilities in the industry. We have a surge capacity unmatched in the world, and an experienced craft base that has proven its ability to adapt to everything from hopper barges and drilling rigs to amphibians and destroyers.

COST OF NAVY SHIPS

As to the issue of how much ships cost, we share the concern of Congress and our customer on this important issue. I believe, though, that the issues we have all discussed regarding stability of programs and consistent funding levels are major factors that we can all work on together to reduce per-ship costs.

The more of any product that goes into an order book in one block, the greater the efficiency and productivity of the design and construction process, the less it costs to make changes in the production line, and the less it costs to buy all of the components from the suppliers I noted earlier. A well thought out, disciplined approach to changes also helps to stabilize costs. This is true for cars, or airplanes, or widgets . . . and it is true for ships.

We understand that you are examining a number of different ship funding options. Advance material procurement . . . block buys . . . multi-year procurement . . . advance appropriations . . . are all potentially useful tools you can employ to stabilize shipbuilding programs and reduce their cost. We have direct experience with only one of these approaches—multi-year procurement on the DDG-51 Program. Multi-year has saved the taxpayers more than \$1 billion in the procurement of these ships at Ingalls and Bath Iron Works.

We fully support funding approaches that lead to more ships being constructed, under stable procurement and production profiles.

So as a team, we are all moving in the right direction. We simply must not let short-term challenges create long-term problems in major, important shipbuilding programs.

TECHNOLOGY INSERTION

Some of you have raised the issue of improving the level of technology in the shipbuilding process, and in the ships we build.

Certainly, block upgrades work in airplane construction—the F/A 18 Hornet program, which involves our new parent corporation, Northrop Grumman, is a good example.

But we have also proven that the process will work in ships as well. If you go back to the original 30-ship DD-963 program, this was really the first ship class built for modular block upgrades. It was designed to accommodate weapons and other systems that, in the late 60s—early 70s were still on the drawing board . . . things like vertical launch missile systems . . . next-generation radar, and others.

The CG-47 Class is another example of block upgrades working. The first five ships of the class had dual rail launchers . . . the final 22 got VLS when that system was ready. The same can be said for sonar upgrades and Aegis improvements. For that matter, some of the upgrades being proposed in the Cruiser Conversion Program that you are funding today, are the types of block upgrades that extend the life of ships and make them more mission capable.

If you compare DD-963 as delivered to DD-997 at delivery, or CG-47 at delivery to CG-73, I think you will see that while the exterior hulls may look the same from first-of-a-class to last-of-a-class, they are certainly vastly improved ships.

Here again, the keys to the success of block upgrades, or modernizations of any type, are advance planning, and stable funding—both in R&D work to develop new systems and in ship production—to provide the platforms to demonstrate the new systems.

CONCLUSION

We in Litton Ship Systems are doing our part in aggressively responding to concerns about the way Navy ships are conceived, procured, designed, built and supported. We will continue to exploit synergies among our companies and our new corporate partners to find ways to reduce the cost of the ships, and to ensure that the very best technology available in our industry is made available to the men and women who will sail our products into harm's way.

We appreciate efforts by Congress to bring new approaches to ship acquisition into the mainstream, building on the success of multi-year procurement. We urge Congress to help maintain stability in ship production rates at levels sufficient to

sustain the Nation's shipbuilding industrial base, and to maintain a Navy of more than 300 ships.

We look forward to playing our part in helping to sustain a highly capable, affordable United States Navy. I look forward to your questions. Thank you.

Senator SESSIONS. Thank you very much, Mr. St. Pé.

Next we will recognize Mr. John Welch. He is the senior vice president for the Marine Systems Group of General Dynamics.

Mr. Welch.

**STATEMENT OF JOHN K. WELCH, SENIOR VICE PRESIDENT,
MARINE SYSTEMS GROUP, GENERAL DYNAMICS CORPORATION**

Mr. WELCH. Thank you very much, Mr. Chairman, for the opportunity to testify before the committee on behalf of General Dynamics Marine Systems. I have submitted a statement for the record, and I will summarize key points for the committee.

Industry has adjusted reasonably well to the current low rate of ship production. However, we need to understand the future. Are we recapitalizing for a 300-ship Navy, or a 220-ship Navy? What kind of platforms will be required for the new threat environment? In developing the plans that will answer these questions, most importantly we need to ensure the key characteristics of successful weapons systems programs are in place: stability, predictability, and cost efficient production rates. My testimony today will focus on the status and needs of the industrial base supporting three major Navy platforms: surface combatants, auxiliaries, and submarines.

First, surface combatants. General Dynamics supports the surface combatant industrial base principally through our Bath Iron Works shipyard located in Maine. Ten years ago, Bath had almost 12,000 employees. Today the company is Maine's largest private employer with an employment level of 7,000 building DDG-51s. A matter of major concern is stable production of DDG-51 class ships to cost effectively transition to the next generation destroyer, DD 21.

At the projected low levels of procurement, ship unit costs will increase and cause significant erosion of surface combatant skills at both shipyards, Ingalls and Bath. In order to prevent this, procurement of at least three ships per year under a follow-on multi-year contract beginning in 2002 is needed. This strategy supports stated force level requirements and is cost effective.

Multi-year contracting for surface combatants has proven results. The current multi-year contract saved the Navy \$1.4 billion and allowed them to buy 12 ships for the price of 11 over fiscal years 1998 to 2001.

Next, naval auxiliaries. National Steel and Shipbuilding Company, NASSCO, a GD subsidiary based in San Diego, California, builds commercial and Navy auxiliary ships. At its peak in the early 1980s, NASSCO employed 7,800 people. Today it is sized to employ about 3,500 people completing the Sealift program, building double-hull tankers for the Alaska trade, and with a goal of transitioning to the T-AKE program, the next generation dry cargo ship this summer. The optimum approach to realized cost savings on the T-AKE program is to enter into a block buy or multi-year

contract and stable, series production after the design has been validated by lead ship construction.

Finally submarines—at its peak in the 1980s, Electric Boat employed close to 27,000 people in our facilities in Connecticut and Rhode Island. Current employment is about 9,000. The unique *Virginia*-class design and construction teaming approach was developed to create an affordable and capable attack submarine fleet for the future. Electric Boat and Newport News Shipbuilding entered into a revolutionary teaming arrangement that provided the most affordable acquisition approach for the *Virginia*-class program while maintaining two nuclear-capable yards. Cost savings by this arrangement and the design build approach are in excess of \$700 million over the first four ships. This program has provided us valuable lessons learned, which are being applied to future programs.

It is essential to increase submarine procurement rates to two ships per year as soon as possible to meet the Navy's force level objectives and achieve production efficiencies. Additionally, contract flexibility and commitment in the form of a follow-on multi-year procurement with economic order quantity authorization, will provide the industrial base, the shipbuilder and the suppliers with the stability and flexibility needed to deliver submarines at the most affordable price possible.

In conclusion, again I believe the question is are we building for a 300-ship or a 220-ship Navy? The key factors to provide a cost-efficient and reliable ship construction base are predictability and stability, both in Navy program plans and in the funding stream available. This is especially true today because the shipyard workloads are stretched thin with current low rates of production. Stability allows us to exploit the advantages and cost savings that can be achieved with innovative contracting techniques such as multi-year block buy and advanced appropriations as described by Mr. Fricks.

If the requirements are for a 300 plus ship Navy, I recommend that Congress and the administration, budget and build three DDG-51s per year under a follow-on multi-year contract as a cost-effective transition to DD 21.

I also recommend that we accelerate the *Virginia*-class program to two ships a year under a multi-year contract as soon as reasonably feasible. Finally, I suggest adopting a reasonable delivery schedule for the T-AKE with the contract option of awarding a multi-year contract once the design is proven. This ensures a healthy and efficient industrial base for the future.

Thank you, Mr. Chairman, and members of the committee for providing all three of us this forum to discuss the critical issues facing the shipbuilding industry, and I welcome the opportunity to answer your questions or take any comments.

[The prepared statement of Mr. Welch follows:]

PREPARED STATEMENT BY JOHN K. WELCH

Thank you, Mr. Chairman for the opportunity to testify before the committee on behalf of General Dynamics Marine Systems. Your invitation requested that I address several issues regarding the status of the shipbuilding industrial base and initiatives to improve cost control, predictability and alternative funding approaches. I will speak to many of those topics in this written submittal. I would also be happy

to discuss any of these issues in more detail during your Question and Answer period.

I appreciate the committee's recognition that there are critical issues facing the shipbuilding industrial base. Although we have sized ourselves to low rate production and had many success stories, major challenges still face the shipbuilding industry as well as our customer, the U.S. Navy, to provide the quantity of ships and submarines and the warfighting capability needed to recapitalize our naval forces.

These challenges are further exacerbated by the significantly lower production volumes in our shipyards compared to a decade ago. This low production volume, and attendant peaks and valleys in workload, result in increased production costs driven by less than efficient utilization of our resources. The uncertainty of future workload compounds these challenges as it serves to limit our ability to plan for and invest in our businesses, absent the assurance of a reasonable return on our investment. Further, while we strive to introduce new technology and capability into new ship designs, the budget constraints imposed on the Navy's shipbuilding programs seriously limit these efforts. Lastly, we cannot overlook the fact that, despite the best efforts of industry and the Navy, the risks of construction cost growth and schedule delays are an inherent part of building complex warships in a constrained budget environment. Repercussions from one mis-step are felt by all. If a problem evolves with any one program, all members on this panel share the burden of recovery.

The staunch "stand alone" mentality that had driven the industry since World War II has evolved to a business environment of shared resources and innovation. Further, the "winner take all" approach has given way to teaming and alliances which integrate the strengths of all of us at the table. One success story on this front is the National Shipbuilding Research Program, NSRP, formerly known as Maritech. NSRP provides a key forum for members of our community, both public and private, to share manufacturing and technology advances. Improvements have a direct impact on the capability, affordability and producibility of naval platforms. Benefits from this program are already being realized by several member shipyards. For example, Electric Boat is already using early results of a joint industry eBusiness project to procure parts for the *Virginia*-class program. The Nation's smaller ship building and repair yards have received significant benefits from the technology and innovations of the Maritech Program. Lack of funding will slow the progress and support needed to continue these collaborative efforts. A total fiscal year 2002 request for \$30M, \$10M more than in the anticipated budget request, is recommended to continue this important effort.

While industry has adjusted well to the current low rate production environment—we now need to understand the future. We welcome the administration's ongoing strategic review. I urge all involved to bring these reviews to an expedient closure and provide industry with the definitive direction to develop our strategic long-range plans in a more stable and predictable environment. The confidence this direction brings will allow us to continue the major capital investments being made by our shipyards to improve productivity and advance the manufacturing process. Significant investments have been made at Bath Iron Works with a \$250M Land Level Transfer Facility; Electric Boat with a state of the art combat and control test and integration site and new steel processing center; and NASSCO with upgrades to shipyard plant and equipment.

My testimony today will focus on the status, successes and needs of the industrial bases supporting three major Navy platforms: surface combatants, auxiliaries, and nuclear submarines.

SURFACE COMBATANTS

GD Marine serves the surface combatant industrial base principally through our Bath Iron Works shipyard located in Bath, Maine. Ten years ago, BIW had almost 12,000 employees and was actively engaged constructing ships in two overlapping U.S. Navy surface combatant programs—CG-47 Aegis cruisers and DDG-51 Aegis destroyers. Additional work involved Coast Guard cutter modernization and Navy ship repair work including the battle damage repair of U.S.S. *Samuel B. Roberts*. Today, the company remains Maine's largest private employer at an employment level of 7,000.

Since General Dynamics acquired BIW in 1995, substantial reengineering of all aspects of the business has been underway. Reengineering and process improvement remain a continuous focus at BIW. Major overhead reductions have been made which will save the Navy and taxpayers hundreds of millions of dollars on current and future contracts. General Dynamics has invested over \$250M at Bath to construct a state of the art world-class shipbuilding Land Level Transfer Facility. This

facility will be officially dedicated on May 5th, the same day the keel of DDG-90, named for your respected colleague the late Senator John Chafee, will be laid down on it.

The facility modernization at BIW will provide the yard's skilled production workforce a better, more efficient work environment. It will permit them to erect and outfit larger sized modular ship units earlier in the construction process and reduce cycle time. BIW will be able to launch ships at a higher level of completion, compress schedule duration at key stages and reduce or eliminate a number of related costs. The U.S. Navy and taxpayer stand to share the benefits of this major investment as a result of reduced costs for U.S. Navy ships.

Significant success has been achieved in the current DDG-51 program with the design and construction of the first two Flight 2A upgrade *Arleigh Burke* Destroyers. Both shipbuilders, BIW and Litton Ingalls, and the Navy have worked in a 3-D CAD environment to accommodate system and design changes affecting 60 percent of the ship's overall design and 80 percent of its drawings. This major effort was accomplished on schedule and on budget. The first two ships, DDG-79 (*Oscar Austin*) and DDG-80 (*Roosevelt*), one from each builder, have performed very well on sea trials.

The shipbuilding industry is excited by the Navy's forward leaning acquisition strategy on the DD 21 program. It represents the next important step forward in Acquisition Reform. Its innovative acquisition approach and aggressive performance and cost goals are leveraging the very best competitive resources available. This competitiveness is evident in the Blue and Gold Teams ship designs and total systems solutions. By providing the industry demanding performance requirements and challenging cost goals, and allowing us to make the cost-performance tradeoffs, we are confident that DD 21 will deliver to the Surface Navy next-generation technology and warfighting capability, at significantly reduced Total Ownership Costs.

The DD 21 design is more mature at its current stage than any previous surface ship program at similar milestones. DD 21 is being developed in a fully integrated environment encompassing the total ship's systems. This will not only reduce potential errors in design products when ship construction begins, but also provide a superbly capable, operationally ready warship from Day One.

The DD 21 design and construction approach builds on the successes of the *Virginia*-class submarine program. Detailed design products will be mature for production and issued months before construction will begin. One particular early focus in the DD 21 program is to ensure that whichever design solution is chosen by the Navy at downselect, the total ship system design can and will be efficiently producible at both DD 21 shipbuilders. Unprecedented initiatives have been made to ensure this result, and will pay significant dividends in terms of production efficiency and reduced cost. DD 21, like *Virginia*, will be constructed in two shipyards based on a common design and a shared data environment.

CRITICAL NEED FOR MORE EFFECTIVE BRIDGE BETWEEN DDG-51 AND DD 21 PROGRAMS

A matter of major concern has been the procurement rate of DDG-51 class ships as the Navy transitions to DD 21. DDG-51 production rate has declined from five ships a year to four ships a year to three ships a year. It is our greatest concern that the fiscal year 2001 budget projects a procurement rate of only two DDGs per year for the next 3 fiscal years. At such a low level of procurement, ship unit costs will increase and cause significant erosion of surface combatant skills at both shipyards. This is a specialized industrial base facing a period of great uncertainty and declining surface combatant workload as it transitions to the next generation surface combatant program, DD 21. An industrial base erosion and subsequent reconstitution will increase the costs of remaining DDG-51 ships and add to the costs and risks to the start up of the DD 21 construction program.

Based on the fiscal year 2001 SCN budget and projected fiscal year 2002 plan, only 7 destroyers are planned to be procured from fiscal year 2002 through fiscal year 2006—6 DDGs and a single DD 21. That equates to a procurement rate of less than 1.5 ships per year for the next 5 years compared to today's procurement rate of 3 ships per year of which each DDG builder receives the equivalent of 1.5 ships per year. This two ship per year level does not support surface combatant force level requirements or sustain the industrial base. The Navy's shipbuilding funding challenge during the fiscal years 2002-2006 time frame has been exacerbated by the funding spikes of nuclear aircraft carrier refueling and construction in fiscal year 2002, fiscal year 2005 and fiscal year 2006, leaving little room for required surface combatant funding.

The procurement rate for surface combatants is not expected to return to 3 ships per year until fiscal year 2007—after a 5-year period of procuring less than a one-and-a-half ships per year. The operational and management challenge of ramping

up production should not be underestimated. DD 21's ultimate success will depend heavily on whether actions are taken now to sustain this industrial base sector at a reasonable rate of procurement to support affordable unit costs and deliver the ships the Navy needs.

The need to establish a more effective shipbuilding transition between DDG-51 and DD 21 programs must be addressed this year. This means sustaining current surface combatant procurement at 3 ships per year under a follow-on multi-year contract beginning in fiscal year 2002. Multi-year contracting for surface combatants has seen proven results. The current DDG-51 multi-year contract saved the Navy \$1.4B and allowed them to buy 12 ships for the price of 11.

Non-DDG-51 shipbuilding work, such as the LPD-17 program, can help from an overall shipyard volume and employment perspective, but sustained surface combatant construction and related engineering work is the only way to ensure that the surface combatant industrial base is adequately maintained and future combatants are affordable.

AUXILIARIES

National Steel and Shipbuilding Company, NASSCO, a subsidiary of General Dynamics based in San Diego, California, builds commercial and Navy auxiliary ships.

NASSCO is also a major provider of ship repair services to the Navy's Pacific fleet in San Diego. NASSCO is the only major full service shipyard remaining on the West Coast. General Dynamics has approved an \$80 million investment in facilities at NASSCO which will further improve cost efficiency and expand capacity in the wide beam (post-Panamax) shipbuilding market, such as Alaskan oil tankers. These new facilities will include increasing crane lift capacity to make heavier lifts and reduce ship erection cycle times on future programs. The investments in wide beam capacity include improvements in steel processing, assembly, and outfitting.

At its peak in the early 1980's, NASSCO employed 7800 people. Today it employs about 3500. Currently, NASSCO is completing a program to build a series of 8 Large Medium Speed RO/ROs (LMSRs) for the Navy which will serve the Army's sealift needs, both for prepositioning and CONUS based fast sealift missions. NASSCO builds commercial ships for the U.S. coastal market (Jones Act). Currently, NASSCO has commercial contracts to build two RO/ROs and three crude oil tankers. The 7th LMSR, USNS *Pomeroy*, was recently launched and will be completed ahead of schedule and under budget just like the other 6 LMSRs already completed by NASSCO. The 8th and last ship of this series is progressing in a similar manner.

NASSCO has made tremendous strides during the last 10 years through process improvements in their shipyard, and is setting new standards in the U.S. for quality, cost, and schedule performance. This standard has been recognized by the commercial customer.

Key factors that will contribute to NASSCO's continued success are: the stability of the design and funding for the T-AKE program, a commercial product orientation, and ship maintenance opportunities.

Most Navy auxiliary ships, like commercial vessels, are being built today to commercial standards governed by the American Bureau of Shipping (ABS). NASSCO's commercial product orientation has allowed the yard to benchmark itself against international shipbuilders that build the majority of the world's commercial ships.

The U.S. Navy and U.S. taxpayers benefit from the commercial work at NASSCO and other U.S. shipyards. Commercial work helps lower costs on Navy contracts through overhead absorption. More importantly, however, commercial work allows U.S. shipyards to keep focused on implementing the shipbuilding processes used by the best commercial shipbuilders in the world.

STABILITY IS CRITICAL TO NASSCO

NASSCO is dependent on both military and commercial work to maintain the critical skills necessary to continue design and construction of U.S. naval auxiliaries. With the strategic Sealift program almost complete, the 12-ship T-AKE program, the Navy's new class of auxiliary dry cargo ships, is an important element to the future stability and maintenance of critical skills at NASSCO.

The LMSR program was a high military priority after the Gulf War. Funding to increase our sealift capability enjoyed strong Congressional support and resulted in a predictable funding stream for the LMSRs. NASSCO, however, was awarded a contract to build a lead ship with a series of options, subject to future funding. While NASSCO and their suppliers focused on designing a ship for maximum producibility, the uncertainty of future funding limited the ability to order materials economically or to make facility investments that would help lower costs. Fortu-

nately, the LMSR program was funded as planned and NASSCO has successfully delivered six ships ahead of schedule and under budget. The final two ships are following the same trend. However, if the Navy could have awarded NASSCO an initial contract for all 8 ships and allowed them to be built to the yard's most efficient schedule, the savings in schedule and cost could have been further optimized.

The T-AKE program is the only near term opportunity for Navy auxiliary ship design and construction. The program is being bid based on shipyard-developed designs and the Navy plans on minimum changes. These factors should help to ensure a stable design and allow for series production. It is noted, however, that program funding stability, like on the LMSR program, is, once again, a major concern. NASSCO hopes to continue their LMSR success story on the T-AKE program. If funding stability could be eliminated as a risk for the T-AKE program, NASSCO could truly focus on producing this series of ships at the lowest cost. The optimum approach to realize cost savings on this program would be to quickly make the award of the first two ships that are already funded and then to find a funding approach which reduces or eliminates the risk of future funding after the design has been validated.

NASSCO success in winning new commercial shipbuilding contracts requires continued Congressional support for the Jones Act. NASSCO will need a combination of Navy and commercial work to maintain its shipbuilding capabilities.

Finally, the Navy needs stable funding for ship repair. Ship repair facilities such as NASSCO cannot plan to perform repair availabilities efficiently when the lack of funding either forces a reduction in the scope of work on a given availability or results in the total cancellation of an availability on short notice.

SUBMARINES

The nuclear submarine program was a first major defense program impacted by the end of the Cold War. Thirty-six submarines were procured in the 1980's, only 7 were procured in the 1990's. The *Seawolf* submarine program, forecasted initially to be 30 ships, was cut to three.

Based on the corporate vision to be affordable at low rate production, Electric Boat in 1993 undertook a complete reengineering of its business. This required us to redefine and resize our facilities, business processes, and organization. Key objectives were to be properly sized to demand, utilizing "best practices" for all processes and procedures, and incorporating a culture of world class performance. As a result, Electric Boat has led the industry in shedding excess production capacity, reducing overhead and infrastructure costs, and developing tools and methods to preserve critical skills and capabilities during the current period of low rate production. These actions have resulted in cost savings of over \$1.3 billion with over 90 percent of those savings accruing to the government.

We also recognized that in order for the submarine industry to successfully meet the challenge presented by this major market change, the supplier base must be actively engaged in the reengineering process. Consequently, through an "Extended Enterprise" approach, we challenged our supplier base to reengineer their facilities for "Affordable Low Rate Production."

Prior to designing *Virginia*, Electric Boat initiated a comprehensive review of submarine design and construction process with the goal of reducing nuclear submarine acquisition and life-cycle costs. Design and construction methods in use by a broad spectrum of U.S. and international industries—aircraft, automotive, power-plant equipment, nuclear reactor plant equipment, and shipbuilding—were evaluated to improve the overall understanding of the design and build process, and eliminate inefficient work practices. The *Virginia*-class design/build process has produced ship construction drawings that are significantly more accurate, and more producible, than any previous submarine program. The fidelity of the design product has contributed to 92 percent fewer changes (as identified by the trades during construction) on the lead *Virginia*-class ship compared to the lead *Seawolf* ship.

In order to meet the additional affordability challenges presented by a constrained SCN budget, the *Virginia*-class teaming approach was developed to permit the creation of an affordable and capable attack submarine fleet. Electric Boat and Newport News Shipbuilding, traditionally strong competitors, entered into a revolutionary arrangement that provides the most affordable acquisition approach for the *Virginia*-class program and maintains two nuclear capable shipyards. Enabled by a new design/build process, and advanced modular construction techniques, each shipyard is constructing pre-assigned modules for each ship, and alternating final outfitting, assembly, test and delivery. This teaming arrangement is designed to produce an improved learning curve and substantially reduce construction costs for the en-

tire production run. Cost savings by this team arrangement and the design/build approach have amounted to \$700 million.

Electric Boat is also pursuing additional means to provide savings to the Navy and utilize the Groton shipyard workforce. Further affordability and resource utilization initiatives are being realized with the submarine Regional Maintenance partnership with Electric Boat and the Navy at the New London Submarine Base and Portsmouth Naval Shipyard.

MULTI-YEAR CONTRACTING AND ACCELERATION OF 2 SUBMARINES PER YEAR

Increasing ship procurement rates to two ships per year is absolutely essential to achieving the Navy's force level objectives and achieving the efficient production rate so essential to a healthy industrial base. This plan will lead to increased efficiency and enable the industry to provide more ships for a given unit cost.

In the *Virginia*-class submarine program, the Navy utilized a "Block Buy" construction contract for the first four ships. This acquisition strategy, coupled with the innovative teaming approach to construction developed by Electric Boat and Newport News, was key to enabling the Navy to afford these four ships, and it provided stability to the industrial base during an extended period of low rate submarine production. To date, the benefits of this Block Buy contract have been validated with both manhour and schedule performance tracking to plan.

Contract flexibility and commitment, in the form of a follow-on Multi-Year procurement, with economic order quantity authorization, will help support attack submarine force levels and ensure industrial base stability for both shipbuilders and key suppliers—stability that is key to affordability.

All major facilities at both Newport News and Electric Boat are in place to support higher submarine production rates of at least 2 per year at each yard—construction of the additional submarines could begin as early as fiscal year 2004. To support this construction level, however, requires authorization of Advance Procurement for long lead material in the fiscal year 2002 budget.

CONCLUSION

In summary, the key attributes needed by industry to give the Navy and the country a cost efficient and reliable ship construction base is predictability and stability—both in Navy program plans and in the funding stream available. Additionally, higher production rates will bring industry to a more efficient level of production.

It is as simple, and as complex, as knowing whether we are recapitalizing for a 300-ship Navy or a 220-ship Navy—this is the crucial metric for our future. We have done well adjusting to low rate production; we now must know what the future holds. We are currently building to a 220-ship Navy. If this trend continues, additional downsizing will be required.

If the Navy is to return to build rates required to maintain 300 ships, multi-year and block-buy acquisitions strategies are critical. These smart acquisition strategies must be coupled with innovative funding approaches that will stabilize the SCN account and avoid the current disruptive funding spikes. Toward that end, I would recommend that Congress and the administration budget and build 3 DDG-51's per year under a follow-on multi-year contract for fiscal year 2002 and subsequent years; accelerate the *Virginia*-class submarine to two ships a year under a multi-year or block-buy program as soon as reasonably feasible; and adopt a reasonable delivery schedule for the T-AKE with the contract option of awarding a multi-year contract within that program at the appropriate time.

Procurement predictability and production rate stability for these programs, along with steady funding for carrier construction and appropriate nuclear refueling can help mitigate the impact of funding uncertainty in the SCN account. This maximizes our current investment in today's programs by building at more economic rates while applying engineering best practices and lessons learned as we evolve to the next generation class of ship.

We need to continue to build on the successes from our recent history. New programs, such as DD 21 have built on the lessons learned from *Virginia*:

Invest R&D funding up-front to buy down technical risk; implement a seamless design/build approach with early design funding; ensure design product fidelity and maturity to maximize construction efficiency with early design funding; and push the envelope further by invoking aggressive cost and manning goals.

Thank you Mr. Chairman and members of the committee for providing us this forum to discuss the critical issues facing us in the shipbuilding industry. I look forward to your questions and comments.

Senator SESSIONS. Thank you very much, Mr. Welch. First I will ask Mr. St. Pé and then anyone else who would like to comment—how do you see the consolidation that you have just gone through, and what does this mean for Navy shipbuilding in general?

Mr. ST. PÉ. Well, the one experience I have is from both our Avondale and Ingalls Shipyards. Back in August of 1999, Avondale and Ingalls Shipbuilding joined in a merger. We took two companies that had rich histories and success in building both Navy and commercial vessels and we brought them together.

I would tell you today that that was an important strategic move for our company, an important strategic move for the shipbuilding industrial base of this country, and today is serving our communities and serving our employees well. We have captured hundreds of millions of dollars in synergies as a result of that merger 2 years ago in forms of shared work and maximizing facilities. Yesterday's announced acquisition of Litton by Northrop Grumman clearly brings to the Avondale/Ingalls family a much, much larger dimension of opportunities as we move forward. I give it high marks. As we talked a little earlier, we talk about six shipyards remaining in this country today with the experience and the capital investment to produce large, complex Navy vessels. It is six shipyards, but it is three companies.

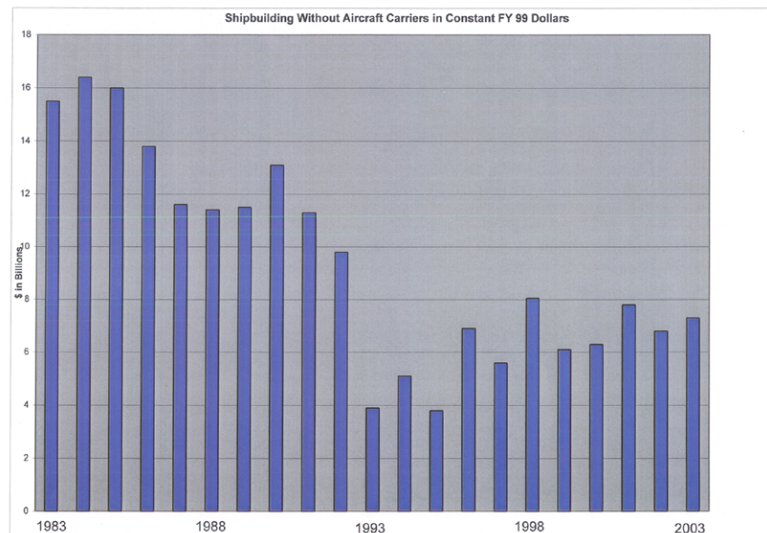
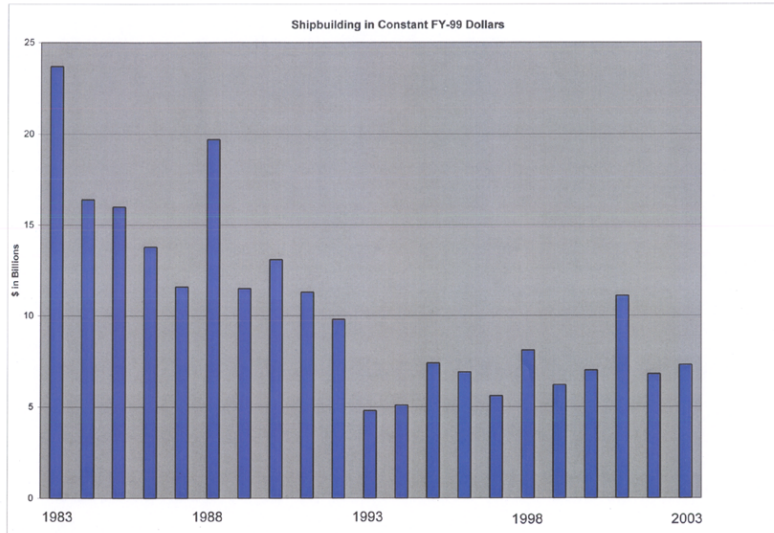
Senator SESSIONS. The three represented here?

Mr. ST. PÉ. Yes, sir, the three represented here. I think that it is important that when one addresses the issue of further consolidation in shipbuilding, at some point we very well may have already reached that point in this country in terms of making sure that we protect the industrial base and also do it in a way that maintains a level of competition that is important, certainly to you and certainly to the taxpayers of the country.

Senator SESSIONS. Thank you.

I just wanted to have you make that comment. I would like to raise one point—however, I notice we have a 10:30 vote, which will interrupt us some, so if we can keep our first round a little shorter than normal, maybe 4 minutes or so, that would be helpful. Then we will come back after the vote.

Each of you have made statements—you have mentioned stability as a key to your ability to plan your work and reduce costs of ships for the Navy. I had our staff prepare two charts which take a 20-year snapshot—1983 through 2003—of ship construction and Navy funding.



The first chart shows the total ship construction funding, and the second chart shows the ship construction funding without aircraft carriers because they tend to skew the numbers. Both charts are in constant fiscal year 1999 dollars.

It is a rather remarkable chart, I think, if you look at the shipbuilding in constant dollars. In 1983, we spent about \$23 billion in shipbuilding, in 1993, we were down to under \$5 billion in shipbuilding. In 2001, this year, it looks like we were a little over \$10

billion, maybe \$11 billion, dropping down next year to \$7 billion, 2002.

Mr. Fricks, you spoke first. In looking at the chart without aircraft carriers you see a similar rise and fall, but not quite as dramatic at least in recent years. How do you interpret that? Is that part of what your concern is regarding stability in your business?

Mr. FRICKS. Well, as I said in the testimony, when we have this kind of instability, we go through lay-offs. We pay for the lay-offs, then we hire people back, retrain them. They have to learn shipbuilding all over again. Our suppliers go through the same thing. With respect to small business suppliers, a lot of them have gone out of business today. All of that volatility, as you can well imagine, is costing the government and costing the shipbuilders a lot more money, and the government is having to pay for it. We are basically pleading for some type of level-loaded stability so that we can plan, so that we can invest, and so that we can prevent the workload changes and maintain the supplier base that we have out there. That is critical to building these complex ships.

Senator SESSIONS. I think if you look at the numbers you can see we could be more efficient and some of that would be the government's fault, you would say. Correct?

Mr. FRICKS. We just build them.

Senator SESSIONS. I understand, but you lose efficiency, which I think is pretty obvious.

Mr. FRICKS. We lose efficiency. There is no question about that. It costs the government more money for us to build ships in this manner.

Senator SESSIONS. We will be looking at that issue further. We will also be having Navy officials come in at another time for an additional hearing.

Senator Lieberman.

Senator LIEBERMAN. Mr. Chairman, thank you. Senator Landrieu has to go to another meeting, therefore I am going to yield to her and then ask if I might go next after someone on the other side.

Senator SESSIONS. All right.

Senator LANDRIEU. Thank you, Senator, for yielding, I appreciate it. I will be brief.

Let me just make a couple of brief points. One, Mr. St. Pé, I want to congratulate you for the excellent work you have done in executing this consolidation, at least as it affects Avondale. It really works for the company, for the general metropolitan area of New Orleans, and benefits thousands of workers. Senator Sessions has provided the leadership to merge the work of both the Ingalls yard and the Avondale yard. There were some pretty tough management/labor problems and disputes there, which he has brought tremendous leadership to work them out. For the benefit of this committee, I just wanted to thank you personally for your good work.

Second, let me say that I could not agree more with the comments that all of you all have made about the need for stability and the opportunity that is presented before this subcommittee to work out a new way of financing for our fleet and for the Navy. I think that is part of what President Bush is going to hopefully call for. I am not certain, but hope it will be part of the overall strategic review on strengthening our military and national de-

fense. This would be a new approach—a major change that would not only strengthen and enhance our fleet, but save taxpayers money and present them with the kind of efficiency and performance that I think they frankly deserve, as opposed to the chart that our good chairman has just given us, which does not make sense to taxpayers, to the industry, or to the men and women that are carried by these ships.

I want to work with you and with our Ranking Member, and have talked a variety of times over the last couple of years about a new financing mechanism that would work better than the one that we have in place.

Let me just ask one question, because of time. Mr. St. Pé, you spoke about the LPD-17 and some of the barriers, and challenges that have caused this particular program to be delayed. What are one or two specific things that this committee could do to get that program moving again, and why is it so important that we do so?

Mr. ST. PÉ. Senator, thank you. Thank you for your personal comments earlier.

I believe today the way I would describe it is, as I said earlier, we approached LPD-17 in a highly competitive environment. Too often we find ourselves engaged in predatory pricing, when winning at all costs prevails. There is not much we can do about that in terms of what our behavior has been in the past, but we can certainly modify it as we move forward.

This country, the Navy, and we in the industry have paid a larger than anticipated price to both design and start production on a lead ship in a very, very important class of vessels. My recommendation—my desire—is that we not waste that investment; we recognize that as it has been in every lead ship, it is the price you pay to find out how to do it more efficiently. The only way we are going to reap the benefits of that is to press on. So my advice would be to continue to fund this program at a sufficient level so it does not become another example of inefficiency because of instability.

Senator LANDRIEU. Thank you very much.

Senator SESSIONS. Senator Bunning.

Senator BUNNING. Yes. Mr. Fricks, you said that the *Ronald Reagan* cost is going to be 3 percent less than originally planned?

Mr. FRICKS. Higher.

Senator BUNNING. Higher? What was the original?

Mr. FRICKS. Well, the contract target price is about \$3 billion.

Senator BUNNING. Three billion, so you are looking at—

Mr. FRICKS. You are looking at about \$90 million.

Senator BUNNING. Ninety million dollars you are talking about over that. Do you think that is good?

Mr. FRICKS. It is a good number today. We launched the ship so we pretty much have a good control over the remaining testing programs. I do think you are probably going to see additional requests from the Navy to upgrade the technology on that ship.

Senator BUNNING. I do not doubt that at all. You testified that due to the downturn in defense spending and the lack of follow-through on proposed shipbuilding programs in many cases, you are down to a single supplier for some materials. Which of these areas are you most concerned about, and why?

I have a specific question I want to ask to follow up on this, and then I will be finished.

Mr. FRICKS. Well, we have thousands of sophisticated pumps, valves, main engines, turbines, an aircraft carrier is a whole multitude of complex equipment that comes from all across the country. I would say that about 40 percent of the dollars of the material costs are sole-sourced today, so we compete about 60 percent.

Senator BUNNING. So 40 percent are single-source places.

Mr. FRICKS. About 40 percent.

Senator BUNNING. OK, then this is my follow-up question, because I think this is something that highlights what all three of you have said about the instability.

Erie Forge and Steel, Incorporated in Erie, Pennsylvania, apparently supplies steel to 90 to 95 percent of the Navy's new-built and rebuilt contracts, including shafts, steel mill products, and tool steel. The company is currently in Chapter 11 bankruptcy. If the company goes under, what ramifications will that have for your ability to deliver ships on time and within budget?

Mr. FRICKS. Well, I would be glad to give you a more specific answer to that. I do not have it today, but we have this occur quite often. We have various suppliers who go out of business. Certainly I would say literally hundreds have gone out of business over the last 7 or 8 years.

[The information follows:]

In response to your specific question regarding Erie Forge and Steel, Inc., Newport News Shipbuilding presently has two orders in place with Erie. The first, priced in excess of \$2.5 million, is for intermediate and inboard propulsion shafts for CVN-77. The second, priced at approximately \$20,000 is for a CVNX shafting design study. If Erie Forge were to go out of business or otherwise could not fulfill these orders, we would turn to the one other company that is a qualified shafting provider. However, that one other qualified provider has limited experience and potential capacity constraints with the production of carrier intermediate and inboard propulsion shafts.

We are presently conducting a quality audit of one other possible source for this material.

Senator SESSIONS. This is currently one of your major suppliers?

Mr. FRICKS. Well, any major supply that goes out of business generally hurts us. We have to find an alternate supplier. Sometimes we have had to come back and ask for waivers to go overseas for certain things. We do not like to do that.

Senator SESSIONS. On basic steel?

Mr. FRICKS. No, on basic components—such as piping and tubing that we are not building here today. I do not know if there is an alternate supplier for steel or not. We buy many different types of steel, so I do not know to what extent we have the flexibility to go to another supplier in this particular case.

Senator SESSIONS. Would either of the two other gentlemen like to comment on that?

Mr. ST. PÉ. Senator, it turns out—and I agree with Bill Fricks—50 percent of the construction of the ship depending on the ship class, goes to the acquisition of materials and supplies that are furnished by thousands and thousands of subcontractors. Without being able to cite specific examples with regard to your question, I can tell you that there are many subcontractors who support this industry who are teetering, as is Erie Steel. In the case of our own

company, we just recently placed an order with that company for the shafts that will go into the U.S.S. *Cole* which we are currently repairing in the shipyard, and I will tell you that if that contract is not fulfilled for whatever set of circumstances, it is a critical contribution to the very thing we are trying to avoid here.

Senator BUNNING. My time is expired. Thank you.

Senator SESSIONS. Thank you, Senator Bunning.

Senator Lieberman.

Senator LIEBERMAN. Thanks, Mr. Chairman. In your testimony, Mr. Fricks, you said correctly that to maintain a 300-ship Navy we ought to be building 10 to 12 ships a year, and we are at about half of that now. Mr. Welch said that the big question—I believe I am quoting correctly—the more important question is, do we want a 300-ship Navy, or do we want a 220-ship Navy? I agree with you.

We are debating a budget resolution on the floor of the Senate now. I do not want to get into it in detail, but the fact is that you look at it and you look at the next 10 years, the money is just not there to have the shipbuilding we need to maintain a 300-ship Navy.

In the normal course of our exchanges—yours and ours—we on this side of the table develop policy and authorize and appropriate, and then we give it to you to build the ships. For a moment because the three of you are experienced at this, I am going to ask you to reverse roles and answer the question for me, if you can or are willing to, whether the standard of a 300-ship Navy is the appropriate standard. You have a lot of experience here. Forget for a moment that you are shipbuilders and know about this field. Are we right to have a national goal of a 300-ship Navy, Mr. Welch? Only because I know you so well do I call on you first.

Mr. WELCH. Well, clearly the Navy's position on the number of ships that it needs is based on what they judge as their requirements to carry out their mission. So I am familiar with a surface combatant study which, at a minimum, had a 116 ships up to a maximum of 135 needed to carry out their missions, and I am more familiar with the JCS study that was done on submarines which talked about an absolute minimum of 55, below that they would not be able to carry out at a minimal basis and a peace-time requirement of 68. Therefore, I believe that the 300 plus ship goal is very strongly validated by national security requirements.

Our position is that we will build to whatever level is there—we just would like to have some stability in the program so we can deliver them at the most cost-effective level. When I look at our commitments, particularly in the submarine force and what we are using the submarines for, because I know that area probably in greater detail, I think that requirement seems to be very firm and nothing that I see in the discussions in the Pentagon are backing off of that.

Senator LIEBERMAN. Mr. St. Pé or Mr. Fricks, do you want to add anything to that?

Mr. ST. PÉ. Senator, I sort of view it this way. Just a few years ago, this country, based on the assessment of those that we rely on to determine what we need to defend ourselves and defend our allies, maintained we needed a 600-ship Navy. That has just been a

few years ago, and I will acknowledge that world events have changed and threats have altered, but I do not believe that the threat today is half of what it was a few years ago, and certainly the mission of the United States Navy in that changing threat has not been reduced by 50 percent. That piece of philosophy, I think, bodes well for the fact that 300 ships has to be the minimum, and it is probably even more.

Senator LIEBERMAN. Thank you. Mr. Fricks.

Mr. FRICKS. I certainly agree with my colleagues. If we have looked at certain analyses the Navy has done, the number is between 300 and 360 ships, and 300 looks like the minimum. Yet from a more practical standpoint, we live in the Norfolk area where all the Navy bases are located. We see the impact on the Navy, on the sailors going out to sea, staying 6 months or longer. We see the impact on their families and what they are being asked to do. They are required to exercise the fleet beyond what it is capable of doing. If this country is going to carry out the foreign policy that it has demonstrated it wants to over the last 20 years, it is going to have to have a fleet of at least 300 ships because it cannot do it on what it has today.

Senator LIEBERMAN. Well, I thank all three of you. My time is up. From all that I know, I agree with you and it focuses on the question—although obviously everything we are talking about today in terms of predictability and stability of the program is critical to maintaining the shipbuilding industrial base. In terms of national security if, in fact, we are serious about a 300-ship Navy, and unless we can figure out some reconfiguration of those 300 ships to do them less expensively, we have to deal with the reality that we are underfunding our shipbuilding program with serious consequences.

In all the discussions—strategic review and everything else—maybe I will be surprised when things come out. I have not heard anybody argue that we need fewer than 300 ships, and we are not on a course to deliver that to our country. Thanks, Mr. Chairman.

Senator SESSIONS. Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman. I just want to follow up on Senator Lieberman's and your questions about what the proper size should be. It is my understanding that a June 2000 Department of Defense report to Congress on Navy force structure requirements actually suggested that we needed a 360 ship Navy, and obviously the Clinton administration's budgets did not in any way provide for that. I was startled when I received my first briefing from the Liaison Office. The Navy Liaison Office gave me a little fact sheet which shows that 10 years ago, we had 110 ships under construction. We have only 37 today, for a decline of 66 percent. This fact sheet also reflects that 15 ships were authorized to be built in fiscal year 1991, while 2001, the number is six, which is a decline of 60 percent. It is clear to me that we have been going in the wrong direction, given what our force requirements are.

Mr. Welch, you mentioned in your written testimony the critical need for a more effective bridge between the DDG-51 program and the DD 21 program. Now, the LPD-17 will help a little bit, but as I understand it, there is still a gap because the current shipbuilding rates would equate to only about 1.5 ships per year. I recall

your testimony pointed out that you believe a procurement rate of three ships per year would be necessary to support surface combatant force level requirements and also to sustain the industrial base. Is that an accurate assessment of where you think we need to be?

Mr. WELCH. That is exactly where I believe we need to be. I think when you are looking for stability, especially as you are transitioning to a new start-up program, I think that is a very critical time. We are in an environment when we build a lead ship of a unit that we want to take the time to take the risk out of the design. DD 21 has a lot of development to go into it. You want to get to the DD 21 program as fast as you can, but you are going to want to transition into that program cost-effectively so that you can avoid a lot of the lead ship cost issues that Jerry is struggling with.

I am worried on two fronts. I am worried that you have an inadequate transition out of the DDG-51 program, one that ramps down to the equivalent 1.5 ships a year, which you divide that between two shipbuilders, you are going to feel the pressure. That puts added pressure on starting up the new lead ship of a class, maybe prematurely. To me, that just does not make any sense. We ought to maintain a stable rate of production and keep the combatant. The skills associated with building and testing a combatant are more complex than what is done in an auxiliary ship or an LPD, and so that work force is very important. The goal is to try to keep it stable, keep it viable, and then transition in the DD 21 in an orderly manner so that costs can be controlled.

Addressing that issue is one point why I think we need to take a look at what the effect is on what happened in the 1990s in our industrial sectors. That is one of the reasons I specifically talked about how many people were employed in 1990 versus today. We have gone through significant downturn in the industry to adjust to these much lower rates of production. Industry acted promptly on that, and I think all three of the businesses are operating very well in low-rate production environments. The impact of that is, we have sent a lot of people home early, and in the cases of our represented work force, it was by seniority.

Therefore we have a very experienced work force that we will need to rely on all those talents as we go forward, but instability makes that harder. I think I have dubbed it the soft underbelly of the industry; the renewal of the work force that is going to have to occur over the next decade. We will need young people that are interested in doing this business to see the stability. We need to get them trained with the experienced folks that we have in transition to the next generation. I look at that inadequate transition of DDG to DD 21 both as just not a cost-effective way to do it, and it puts all that additional pressure on the people that have to build the ships and maintain that critical skill base through that period. That is just not for the shipbuilders, it goes right through the supplier base as well.

Senator COLLINS. Mr. St. Pé, I had hoped to have you comment on that as well, but I see my time has already expired, so perhaps after the vote in the second round I can ask you then.

Senator SESSIONS. Well, we just got a note that looks like 10:55 will be the vote, so we will have a little more time. Senator Reed.

Senator REED. Thank you very much, Mr. Chairman. Gentlemen, the Joint Chiefs of Staff has a goal of having 18 *Virginia*-class submarines by the year 2015. Mr. Fricks and Mr. Welch, when is the last year we can begin construction of two submarines a year to accomplish that goal? How much time do we have until we have to get to 2 years?

Mr. WELCH. I believe that date is 2006. Now, one of the difficult issues is that it also assumes you are going to come up with three ships a year a few years after that. Again, I would think we would be better served in ramping the work forces up at both EB and Newport News to deal with that to get to the two-a-year ship level earlier. That will allow you to delay having to go to three ships a year. My view is let us get to two a year, which will really drive the costs down. This is actually upon us a lot sooner than we would like to think, especially given the advanced procurement required on some of the long-lead components.

Senator REED. Mr. Fricks.

Mr. FRICKS. I think that statement is about right—2006. As John pointed out, it would be easier and more cost effective if we start two a year in 2004. We look back at what we built—the 688 program which was a very stable program both in Newport News and Electric Boat, and I can tell you we reduced the manpower costs for those ships by about 40 percent. We can do the same in the *Virginia*-class if we are given a stable workload. The sooner we start that, the more we are going to save.

Senator REED. All of you gentlemen have talked about the production of new ships, but there is another area, and that is the maintenance, particularly submarine maintenance. I wonder, Mr. Welch, could you comment on the submarine maintenance market and your views?

Mr. WELCH. I think for the industry, the naval shipyards plus private shipyards—the maintenance workload, much of it has been deferred over recent years. Over the next 5 to 7 years, there is going to be a significant challenge for what I would call the nuclear industrial base, both public and private. I think that we are going to need the best resources that we have, and the private yards I think can play a very significant role in all of that, and we just need to plan for that ahead of time. Just like everything else in the shipbuilding and ship repair business, you need to plan for that ahead of time, lay the targets out for when the work needs to be done, plan for it effectively, get the material and execute. That is going to be a significant challenge for the industry to come to that large load of both refueling and overhaul work targeted for the submarine fleet in the next 5 to 7 years.

Again, I think that it is one of those that the entire industrial base can properly respond to and figure out the most cost-effective way to do it, and I think both of the private yards can play a significant role in that.

Senator REED. So as we go forth, particularly this year, we should be urging that that planning and those accommodations be made this year.

Mr. WELCH. Absolutely.

Senator REED. Let me ask another question, then. We all understand that there is an intense review of the military strategy policy

procurement by the new administration. There has been some discussions of leaping over existing technologies, going to more unmanned vehicles both in the air and on the sea, using long-range precision strike weapons that might, in fact, displace plans to construct surface ships that we are contemplating now. I just wonder—have you been at all contacted since you are the three remaining shipyards in the country, with respect to any of these reviews by the administration? Have you had a chance to offer your input, Mr. Fricks?

Mr. FRICKS. We have had no direct input, nor have we been asked about that.

Senator REED. Mr. St. Pé?

Mr. ST. PÉ. Same here, Senator.

Senator REED. Mr. Welch.

Mr. WELCH. I had the good fortune to be on the Center for Strategic and Budgetary Assessments Panel in early January, I think before Andy Marshall had been designated as part of the review team with Secretary Rumsfeld. Also I had the opportunity to specifically address the idea of leap-ahead technologies and how it was possible to introduce technologies in a cost-effective quick manner in the shipbuilding business.

The thing I would stress out of it, and the same thing I did at that meeting, is we have a pretty speckled history on R&D investments for the future—steady R&D to field prototype, test new technology and get it to sea. The submarine community probably does that better than any of the major combatant communities. We need that steady level of research and development prototyping activities so that we can test those things out and then introduce them into a production line and a block-type of approach so you can cost-effectively introduce those into the ships. If it is focused in the command and control system area of the ship, keep the rest of the ship on its learning curve, driving costs out of the program and then focus that change and that additional cost into fielding a specific capability.

I feel I have had the opportunity to get some of those issues on the table, but if you look at the whole issue of stability, a subset of that is in a very well-planned and constructive manner, introducing this new capability into a production line so you do not drive the costs way out of whack.

Senator REED. Thank you very much. My time is expired.

Senator SESSIONS. Well, I think this panel seems to agree that we would like to get our ship construction numbers up and at the same time do that in a way that utilizes your yards most efficiently. We would also like for the Navy and the government to reap the benefits of that. We are now consolidating yards, and we have in some ways less competition. How can we manage a yard to try to do things that may not be in the government's immediate interest but in the long-term interest to try to have a steady flow of shipbuilding, and then reap the benefits for the Navy? How can we be sure that will happen? Mr. St. Pé, we will begin with you.

Mr. ST. PÉ. Well, Senator, let me reflect back a little bit on my oral testimony. There is sufficient empirical data that says if we continue to support programs that are needed, support them in terms of numbers of ships each year, and in terms of adequate

funding, not necessarily full funding, there are a lot of approaches I know that are being considered as we speak with regard to how we fund an adequate fleet and at the same time understand the restrictions and the constraints on the budget. History tells us that the best contribution we can make is to let programs move along and not have a disruption. It gets back to the issue of stability.

I would say that this industry has demonstrated more times than not—many more times than not—that it knows how to work its way out of challenges and difficulties. Have faith in us. History is on our side. History is on the side of Congress. What I believe has to happen here is that some of the alternatives that are being discussed, with regard to multi-year funding and advanced procurement, must get serious consideration. In the absence of a new approach to procuring ships, I suggest to you that we will be here next year at this hearing, and the charts that you are sharing to us will be worse than we are seeing today, Senator.

Senator SESSIONS. Well, the charts certainly show that it is not a good history, and I cannot dispute that that is a prescription for inefficiency and higher costs than would be otherwise.

Let's talk about these proposals—some are new and some are old—about how to fund shipbuilding, which is a big deal, a long term act, and we in Congress do not like to think in terms of long-term commitments. The House of Representatives just has a 2-year term. They do not complete a new Congress every 2 years.

So let me ask you about these proposals. There are advanced appropriations which the CNO is talking about; full funding, which is one of the traditional ways; a multi-year procurement, which from what I understand is you have a mature design that seems to be an effective step; economic order quantity, that is a quantity of economic proportions that would give efficiency; and finally advanced procurement in even amounts over 3 to 5 years, and perhaps a 3- to 4-year cycle that would include buying one type of ship each year with a total amount of funding available. You have heard all of these. You know them, I am sure, in some ways better than we do because it is important to you about how you do your business. Mr. Fricks, would you like to start off and comment on where we are and the way we fund ships and how it could be improved?

Mr. FRICKS. Well, today we basically full fund the ships. That results in this type of movement around because we cannot afford in the budget process to fully fund all the needed ships. The advance appropriations gives us the opportunity to take advantage of the fact that when you fully fund a ship for \$2 billion, you only spend a very small portion of that in the first couple of years. As I gave the example of us when we would build a dry dock, we would approve the dry dock but approve the funds over a period of time. That would allow us to use that differential to build more ships.

As far as the block buy and the multi-year buy, they all have different twists with regard to how you implement and restrict them, but they are all geared to the same principle, which is to allow you to begin several ships up-front and take advantage of the economic quantities of material to save the money. They all point towards stability.

We would wholeheartedly endorse all of those items in different utilizations for different programs and, certainly, looking at advance appropriations so that we can actually build more ships.

Senator SESSIONS. I was just saying that in the long run you carried your money over, though, and it is not going to make any more ships year four, five, and six, is it?

Mr. FRICKS. Advance appropriations—is basically a one-time opportunity to build more ships. Multi-year procurement provides the opportunity to save money so that you can build more ships.

Senator SESSIONS. We are delighted to have our committee Chairman, Senator Warner, join us, and former chairman of this subcommittee.

Senator WARNER. Invariably carrying on in my stead, but I have some modest interest.

Senator SESSIONS. I know you do. Mr. Chairman, do you have any questions at this point?

Senator WARNER. You have here in these three distinguished witnesses a corporate memory of all types of funding. They do not go quite way back into the grandfather era when I had some responsibility in the department, but there has been a multiplicity of approaches to try in the budget process with the OMB, whether the President is Republican or Democrat. There has always been a push-pull as how to change some of the terminology to generate up-front more cash to enable a greater number of ships. We have the basic problem. It is interesting.

Just a little historical concept—I went down to give a eulogy at Mr. Sisisky's funeral, and we should note in today's record that he, on the House side, was the Chairman and Ranking through the years on the Subcommittee on Seapower and shipbuilding and spent his life in Congress on this subject. He used to always joke with me about when we were in the Navy in the war in 1945. There were 6,721 ships of the line in the United States Navy. Today the CNO was right next to me going down on the plane—313. We are looking for ways to try and build our Navy, given that there are world-wide problems, and certainly we are seeing one in Asia today which requires the Navy to cover an awful lot of ocean. We have to find a solution to this situation. It is just imperative that we do it.

I think it would be important to the record to show all of the innovations that we have tried through the various years as best we can—perhaps we can put this in the record. We used to use advanced funding as a euphemism to sneak in under the tent of the OMB. Then we would do partial. It all goes back to the struggle between Congress and the Executive Branch to try and use various mechanisms to get more money up-front to increase the number of keels that we can put down at any one time and start a program. I commend the Chairman and the Ranking Members of this committee to explore this important subject, because we are at a critical threshold today at 313, and if we are going to go at the building rate—maybe it is in the record already—we are going to sink below 300 in the not-to-distant future. Am I not correct on that, gentlemen?

Thank you for the opportunity to have a small remark.

Senator SESSIONS. Thank you, Mr. Chairman, and there have been some modest improvements over the years in ways to eliminate some of these problems, and I think we need to keep working at it.

Senator Lieberman.

Senator LIEBERMAN. Thanks, Mr. Chairman. Thanks to Senator Warner. I could not agree with him more. Mr. Welch, with respect to funding—there have been some recent news reports about cost-growth on the *Virginia*-class program. I wonder if you could, for the subcommittee, comment on that from the shipbuilder's part of the record?

Mr. WELCH. I will talk to the shipbuilder's piece of it. There are, in the total program, several portions of government-furnished equipment which the government is responsible for those.

Senator LIEBERMAN. Sure.

Mr. WELCH. There were two aspects that were identified in that recent article, and I talk to both design contract and to the construction contract which is for the first four ships, and the fourth one will be in this year's budget.

On the design contract, the innovative and design build approach is much more aggressively sought at on the *Virginia*-class than we have in previous classes, and we were fortunate to have the funding up-front to get that design going early before we had to go to construction. It has been a very successful design program. Our current estimate at complete for the design is a 3 percent growth over the basic design contract. Our estimate at complete is a \$1.5 billion design contract.

The real measure of the success of that design effort is what we are seeing in the production of the first three *Virginia*-class submarines today. We have a very disciplined process for how we complete the design. We take a minimum of 26 weeks to get the paperwork ready and then take that design out into the production environment, much of it taken electronically and either sent to Newport News or directly to our machinery up in Quonset Point.

The labor performance on those first three ships has been outstanding. Any minor growth that was experienced in additional manhours to build the ship has been more than made up for by overhead reductions, so there is no labor issue associated with building those four ships under the estimate that was put together in 1998.

Where we have experienced cost growths were in areas that were in some ways beyond our control. One of them is in escalation—which is the wage escalation that has developed through a Bureau of Labor Standards indices across all of the shipbuilding. The assumption is when that program was put together, in which we were put under contract, there was a 1.5 to 2 percent escalation, and we were experiencing across the shipbuilding industry 4 to 4.5 percent.

There has been some material cost growth in there which is beyond what we estimated, when we bid the contract. We believe we have that under control. I think that is indicative of what has gone on in the supplier base as we have come out of the drastic reductions in the 1990s coming into the 2000s to provide a lot of that material.

Mr. Chairman, to one of your comments earlier, we have 31 single or sole-source suppliers in that *Virginia*-class program. They are the only people that do it. We have worked with them in an extended enterprise effort since the early 1990s to allow them to get through that very low rate of production and hold them together as viable suppliers as we come up to the one-ship-per-year essential rate that we are at today.

Most of the growth is in those two areas, escalation and material. We think we have that under control. We are going to have to continue to watch it. My biggest measure of how successful that construction program is going, and again I go back to the early design activities and the use of the 3-D product model design built process taken into production, is that today we are experiencing 93 percent fewer changes in the construction of that lead ship than any other submarine. The relative percentage of changes in surface ships is not that much different than submarines, but 93 percent fewer changes on that lead ship, and that ship is on schedule. It will deliver on time. There are some people who think it might even be better than that. So it is a very successful program. I think that the cost growth that is there, we have under control, and looking at the total context of the design and construction of the project, I am very pleased where we are now.

Senator LIEBERMAN. Thanks so much for that good answer. We will be following that closely.

I have several other questions which I am going to submit for the record. The one, I would like to raise and ask you if you would answer it in writing. I know the Navy conducted a study of the industrial base for the surface combatant several years ago and determined that to keep two viable shipyards in the business of building destroyers and cruisers, we needed to be building a minimum of three DDG-51s a year, with some additional work at Ingalls. The study concluded definitively, even with the additional work, if we kept the two DDG-51s per year, one of those yards would most likely be forced out of business. We have asked the Navy to update that analysis, which is now being reviewed by GAO and should be given to us later this spring. I would welcome your comments on how that report is coming for our benefit. We do not have time now, but I would invite that in writing if you would. Thanks, Mr. Chairman.

Senator SESSIONS. Thank you.

Senator Bunning.

Senator BUNNING. Yes, I would like to know if any of you three gentlemen have testified before the subcommittee, since this is my first appearance here, in the last 9 years.

Mr. FRICKS. John and I testified regarding submarine building here 4 or 5 years ago.

Senator BUNNING. Just please answer my question.

Mr. FRICKS. Yes.

Senator BUNNING. Yes? Did you make any comments or concerns about the reduction in force from a 600-ship Navy to a 300-ship Navy?

Mr. FRICKS. Yes.

Senator BUNNING. You showed some concern that we were reducing?

Mr. FRICKS. Yes, sir.

Senator BUNNING. How did the testimony go on the expenditure of monies for keeping the force at a level that you thought was essential for the national defense? In other words, if 600 ships in 1991, or 538, was the number that we had then, and now we have 313, somebody has to express concern that we were not funding the Navy shipbuilding program properly.

Mr. FRICKS. Yes, sir. I think that we have all talked about that. I think from the 1996 time frame on when it was clear that we were building at half the number of ships that were required to support a 320-ship Navy.

Senator BUNNING. Then you did say something about the current budgets that were being projected for shipbuilding?

Mr. FRICKS. Yes, sir.

Senator BUNNING. What kind of reaction did you get from this subcommittee?

Mr. WELCH. We heard the same kind of concern that we heard today.

Senator BUNNING. That is a great answer, but what did they do about it?

Mr. FRICKS. Well, I think the numbers are slightly obvious. We continued to go down. We testified here—

Senator BUNNING. Yes, that is what I want to get to.

Mr. FRICKS. We have testified here, we have testified in the House, and we have acknowledged each year we continue to decline, and nothing has changed that slope each time we testify.

Senator BUNNING. You are saying that the budget that came up from the White House did not sufficiently cover the amount of ships that we needed to maintain a national defense safety level as far as the Navy is concerned.

Mr. FRICKS. That is correct.

Senator BUNNING. That is correct.

Mr. FRICKS. Yes, sir.

Senator BUNNING. I will submit some further questions on this subject. I am deeply concerned that now both sides are worried about the level of shipbuilding, and for the last 8 to 10 years we have been reducing to the point of 200 and some plus ships that are not in service, and we are not building to the level that we can even maintain 300 ships. In fact, somebody said 200 in their testimony. I believe it was you, Mr. Welch.

Mr. WELCH. Yes, sir. If we keep building at the production rate we have for the last 4 or 5 years, we are on a glide slope to 220 ships.

Senator BUNNING. OK. I am going to submit some questions to you three gentlemen to find out where you were in the last 10 years, and why our budgets did not reflect any of your concerns over those 10 years so that we can get up to the level of safety. Thank you very much. My time is expired.

Senator SESSIONS. Thank you, Senator Bunning.

Senator COLLINS.

Senator COLLINS. Thank you very much, Mr. Chairman.

Gentlemen, as you know, the administration is close to making a decision on arms sales to Taiwan, which includes a request from the Taiwanese government for four DDGs. Now, there are obvi-

ously many important policy issues related to the potential arms sale, including our obligations toward Taiwan and our relationship with China, but another important consideration, which is of concern and interest to me is the impact of the sale on maintaining the industrial base. In your testimony each of you highlight difficulties you are facing with the declines in shipbuilding procurement rates.

Mr. Welch, I want to start with you, and then Mr. St. Pé. Do you have any comments on what the impact of such a sale to Taiwan would have on maintaining the skilled work force that you need in each of your shipyards?

Mr. WELCH. It would definitely have a positive impact if, indeed, that sale were to go through for four ships. That would be one heck of a good way to get up to that three-ship-per-year level, then we wrap that up in a multi-year type of procurement. I think we could save a heck of a lot for the Navy, both in delivery of ships to the United States Navy and those that would go to Taiwan. It would have a very positive impact and, again, it is very critical to maintain that bridge. It could be one of the ways to maintain that bridge to get the DD 21.

Senator COLLINS. I agree. As we go to the DD 21 program, what thoughts do you have, Mr. St. Pé?

Mr. ST. PÉ. Yes, as Mr. Welch pointed out, Ingalls Shipbuilding and Bath have been in alliance for the last 3 or 4 years in pursuit of that opportunity. I would answer by saying that while clearly the Taiwanese opportunity to build Aegis ships would make a significant contribution to bridging the gap, I do not view it as a replacement for the requirement to build three Aegis ships for the United States Navy. These are two separate issues—one has to do with stability of our shipyards and maintaining the work force and its efficiency; the other has to do with how many surface combatants we need in the United States Navy. So it is important to our business, but it does not solve the problem the Navy is facing with a ship shortfall.

Senator COLLINS. Absolutely, and I was not implying that it does. Obviously our first priority should be meeting the requirements for surface combatants that we already have for our national security purposes, but as I listen to the concern about what the bridge is going to be as we move to the DD 21 program, it seems to me that this might be a way to assist in maintaining the industrial base that is so critical to meeting our future security needs.

Mr. WELCH. I just think one point I would emphasize that what you are talking about is the sale of DDG-51s.

Senator COLLINS. Right.

Mr. WELCH. They will make a big difference. Some of the other alternatives would have little or no impact for either of the shipbuilders.

Senator COLLINS. Mr. St. Pé, I am a strong advocate of pursuing a 12-ship LPD-17 program. As you alluded in your statement, the program has encountered a number of cost and schedule difficulties since its inception. Could you comment further on what the root causes of these difficulties have been and whether, in fact, you believe that Avondale is now on track. This is of great interest to Bath Iron Works and my home state.

Mr. ST. PÉ. Absolutely. Senator, as you may or may not recall, prior to the award of the LPD-17 program to the alliance of Avondale and Bath Iron Works, Ingalls Shipbuilding was a separate company and we were in competition for that program and did not prevail.

I said earlier—not in a way of boasting but only in a manner of trying to bring some credibility to our assessment—we have had a lot of experience in designing and building first-of-the-class ships at our Ingalls shipyard: DD-963s, CG-47s, participating in the design of DDG-51, LHAs, and LHDs. I will say to you that being as objective as I can, had that award decision been different and the LPD-17 been awarded to the other offeror, we today would be facing some of those same challenges associated with a first-of-a-class ship.

The combination of Avondale and Bath Iron Works, including General Dynamics, brought to the LPD winning proposal the best this industry had in terms of understanding of the challenge and understanding the estimated costs. That was 4 years ago. As I look back on it and say what could we have done differently, the first thing comes to mind is that the environment in which we were competing perhaps caused us to be more optimistic than we needed to be. I do not know that it was a “win at any cost,” but surely it was a win at an unrealistic cost, and that is where we started.

Having said that, there were clearly some challenges associated with a new design tool, which today I can tell you is well on the way. The design in this program is 80 to 85 percent complete. I have a belief that ships are never finished. When they leave my shipyard or Bill Fricks’ shipyard, or John Welch’s shipyard, they are never complete. Thirty five years after they retire, they are never complete.

The design of ships is the same way. Designs evolve, and as they evolve we get better at it. We are over the hurdle here. We believe that. I believe the Navy believes that. I use the analogy that the best hot dog is the one that you are eating at the time. The most challenging shipbuilding program is the one that is before us at the time, and that is where we are with LPD-17. We are on our way to making this a successful program, and the best contribution we can make is to not let it get slowed down.

Senator COLLINS. Thank you, Mr. Chairman. My time has expired.

Senator SESSIONS. Thank you. Senator Warner.

Senator WARNER. Mr. Chairman, thank you. I am just going to quickly wrap up on that subject that I raised that our committee working with the Appropriations Committee should do our very best to see whether or not we can lay down a concept by which we can add additional funds.

I mentioned the advanced appropriation. I ask you now to put in the definition that I have been using for that.

Mr. ST. PÉ. That is excellent. We need that.

Senator WARNER. Thank you. I draw the attention of the Chairman the fact that the House Budget Resolution contains a provision that would effectively prevent implementation of a recommendation that I have.

I would suggest that the Chair and members of the committee work together. I understand your senior colleague, Senator Snowe, might be addressing this issue to see whether or not we can put an amendment on the current Budget Resolution before the Senate which would at least bring this into a conference item status so that we could hopefully resolve between the House and the Senate such differences as we may have. I think this concept is a good one, let us see what we can do to implement it.

I thank our distinguished colleague from Maine for her questions about the use of funds to augment the shipbuilding DDG-51 class in relation to the Taiwan package. I have been looking—and this committee has looked into—the advisability of what the naval part of that package should be, and the two classes of ships. There is a question between the *Kidd*-class, which are ships that were once manufactured in the Reserve status today which could be brought out.

I presume your yards have made some estimate of what time those ships could be brought out. Do you have an estimate on that, gentlemen?

Mr. ST. PÉ. I do not have it before me, Senator, but indeed that has been in the study we are working on with the Navy.

Senator WARNER. But it is a relatively short period of time.

Mr. ST. PÉ. Yes, sir.

Senator WARNER. In other words, I would think 18 months. Is that a ballpark?

Mr. ST. PÉ. I do not know. I cannot quantify that. I would say about 18 months.

Senator WARNER. Yes. That would enable the Taiwanese Navy to get a class of ships into the heavy destroyer class. Then begin to learn to operate that type of ship now, and preparation for the *Kidd*-class if it is the decision of the President at a later date, and not in this package, to give authority to begin the acquisition of the *Kidd*-class.

My approach to this given the tensions now in that whole area of the world and particularly in China, is that we ought to do it step by step—maybe the *Kidd*-class—because the delivery of the DDG-51 *Burke*-class has to be what, 6 or 7 years from now. What is your estimate on that?

Mr. WELCH. Typically 4½ years to build, so the first one, if authorized this year, they would not have it for 5 or 5½ years.

Senator WARNER. Five, 5½ to 6 years whereas their Navy could utilize, in all probability, that type of hull and the capability of those systems on the *Kidd*-class and have that experience under their belt should at a later date that we get into acquiring the more advanced *Burke*-class.

Those are options before the President. The President and his team have been in consultation with Congress. This committee has had several briefings on this subject. I intend to speak on it and give my own views very shortly. I thank the Chair and I thank the members of the committee for the opportunity to be with you today.

Senator SESSIONS. Thank you, Mr. Chairman. You have given us some good ideas. I think that with the Chief of Naval Operations interested in some sort of advanced appropriations improvement along with the Chairman's suggestions, we may be able to do some-

thing that would help improve the system and perhaps get it to a conference committee which would leave us in the best opportunity this year. I doubt it will be a dramatic achievement this year or a dramatic change in what we are doing, but good progress I believe is achievable.

We do have a vote now. I think most of the members have been able to ask their questions. If you would be available for submission of additional questions in writing, which I intend to do and several others as well, I think at this point we would be prepared to adjourn.

I would note that with regard to the Taiwanese situation, while we do not desire to be provocative at this time, I do not believe that the United States needs to be timid about our partnership with Taiwan. I think we need to make decisions soon that would give them a realistic chance to provide for the defense that they feel they may need.

Is there anything else? We would stand adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

1. Senator SESSIONS. Mr. Welch, Mr. Fricks, and Mr. St. Pé, what business case can be made for productivity improvements which require large capital expenditures when the annual procurement rate of ships is small?

Mr. WELCH. Business will make capital expenditures to support productivity improvements if and only if the risk-adjusted rate of return from such an investment is acceptable. Given the lack of stability in current ship acquisition forecasts, and the low rate of production, it becomes very difficult to construct a business case which results in reasonable payback probabilities. Moreover, the nature of ship acquisition contracts is to require that any savings beyond currently firm contracts accrue to the government, and with very small backlogs the opportunity to recoup costs is minimal.

There are several avenues available to the government to encourage or increase productivity-enhancing capital expenditures. These include but are not limited to:

- Direct government funding of productivity improvements where the benefits can be demonstrated to primarily accrue to the government. As noted above, the government captures all savings on downstream contracts, and in most of the major U.S. shipyards a majority if not all of the work performed is on government contracts. However, how to allocate such funding, and the limitations on direct government subsidy to those yards also engaged in commercial ship construction, make such an approach difficult.
- Agreement by the government to share estimated savings on future work (not yet under contract or negotiated) with the shipyards. Difficulties with this approach would be how to calculate the value of such savings on future contracts, and the risk (from the shipbuilder's standpoint) that there might not be sufficient future work for the yard to recoup the investment.
- Increased stability and reliability in the Government's long-range ship acquisition forecast, on a program-by-program basis. This would reduce the risk associated with a capital investment, although by itself it might not result in encouraging productivity improvements. From a theoretical competitive standpoint, each yard would like to be as productive as possible, but if confronted with an environment where Navy market share/number of contracts awarded is essentially fixed, there is a disincentive to make the product cheaper (and profits proportionally lower) unless the shipyard can share in the savings, a problem as noted above.
- The best approach would be for the government to authorize and enter into multi-year procurement contracts for significant numbers of ships, even if the rate of production was very low. This stable, firm book of business would enable the shipyards to make reliable assessments of the return on capital expenditures, with a reasonable percentage of the expected savings accruing to the shipyard over the period of forecast work. The government would reap the majority of the savings from such capital investments on all

contracts beyond the current book of business, through lower negotiated or competitively awarded ship prices.

Mr. FRICKS. Mr. Chairman, as I said in my formal statement, the current condition of the shipbuilding industrial base is that it is surviving but struggling. The quandary for shipbuilders today is that the Navy has stated a need of 300–360 ships, which is the equivalent to 10–12 ships per year, yet we continue to build about half that many. So the industry's challenge is whether to invest in a program to upgrade facilities for twice the work load or continue to retrench to build the number of ships that are actually being authorized each year. In order to realistically assess large capital expenditures for productivity improvements, it is critical to know how many and what kinds of ships are going to be built in the future.

Mr. ST. PÉ. Productivity improvements, and capital expenditures to facilitate those improvements, are more important to corporations and their shareholders when procurement rates of ships decline. This is simply because efficiencies of production must be maximized when the number of individual products—items, in our case ships, upon which a business earns profit—is reduced. We must work to find more efficient, more cost effective ways to produce each item.

2. Senator SESSIONS. Mr. Welch, Mr. Fricks, and Mr. St. Pé, there have been press articles which indicated that foreign shipyards are more efficient than the six major shipyards that build Navy ships.

What is your opinion of such observations?

Mr. WELCH. There are many differences between foreign “highly productive yards” and U.S. yards. However, the bottom line conclusion is that there is little relevant basis for a direct comparison of foreign v. U.S. shipyard productivity.

- Foreign yards build almost exclusively commercial ships while U.S. yards build almost exclusively Naval ships. Japan and Korea combined have some 70 percent of the world market share for commercial ships. The U.S. has less than 1 percent.
- This market share was initially clearly developed with extensive government subsidies. Whether such subsidies, direct or indirect, continue today is hotly debated.
- U.S. Naval ships are by far the most sophisticated, complex ships built in the world. Comparing productivity on a Rolls Royce versus a Chevrolet is misleading.
- Shipyard activity level volume is a critical determinant of productivity.
 - High volume and consistent levels of volume enable a yard to attract the “best and brightest” management and engineers, to attract, retain and invest in skills training of a dedicated, permanent workforce.
 - High volume, most importantly enables a yard to constantly refine its production processes through repeated, systematic lessons learned on sequential ships.
 - Volume, and particularly standardized repeatable volume, enables productivity enhancing capital intensive facilities and automation.
 - Most telling, given the above, U.S. yards build their relatively complex Naval ships at very low volume runs (3 ship deliveries/year is a large run for a U.S. yard; in comparison, one Korean yard, Hyundai, builds 50 commercial ships a year).

Mr. FRICKS. Mr. Chairman, I know that many of you have heard about the low cost shipbuilding in Japan and Korea. I have been there many times. We have worked with their companies, and we have walked their factory floors and their dry docks. There is no mystery to their low cost model. They have stability in production. They have stability in design. This supports the serial production of a large number of identical ships. Because of that, they can invest heavily in their plants and in their up-front planning. These investments pay large dividends in reducing costs. Although the ships they build are almost exclusively commercial, and not nearly as complex as U.S. military warships, that model works for both.

The U.S. shipbuilding industry stands ready to make those same kinds of investments if it becomes clear we have a dependable future market. That is not to say that this industry has not invested in itself. Newport News Shipbuilding has invested more than one billion dollars in the last 12 years. These investments, in computer-aided design, robotic manufacturing and new facilities have enabled us to substantially reduce the man-hours required to build carriers and submarines.

Mr. ST. PÉ. We do not believe that foreign shipyards are more efficient, in an apples-to-apples comparison. Government subsidies and, in some cases, lower labor costs at these yards enable them to produce vessels at a lower unit cost. Korean

shipyards for instance produce tankers for less than we can pay for materials. Second, most foreign shipbuilders do not produce ships of the complexity of a DDG-51 or an LHD. U.S. Navy survivability requirements are simply not required by foreign navies. These U.S. Navy requirements, which incidentally, we think are valid, require different engineering expertise, fabrication and test skills.

3. Senator SESSIONS. Mr. Welch, Mr. Fricks, and Mr. St. Pé, some of your shipyards have commercial shipbuilding and repair work which lowers the overhead charged to Navy ship programs. What is your experience with commercial work and would commercial work enable you to lower overall costs charged to Navy ships?

Mr. WELCH. Commercial shipbuilding volume in U.S. yards is a major benefit to naval ship construction. The added volume from commercial work lowers overhead costs charged to the Navy ship in that yard. Equally, if not more important, the commercial work brings design and construction process improvements to Navy programs. 99 percent of the world's ships are built outside the U.S. The U.S. clearly holds a material lead in war ship product technology; however, the lead in commercial ship design and production processes technology as well as commercial ship production facilities technology largely resides in the world class foreign shipyards.

U.S. yards, by producing commercial ships, are forced to constantly benchmark against and aspire to equal the technology improvements achieved by the world class commercial yards. These processes have tremendous spill over benefit to Navy ship design and construction efforts.

Lastly, the commercial volume in U.S. yards yield added activity volume which enables U.S. ship builders to attract and retain a broader base of professional, experienced naval architects, marine engineers and production managers. This is of significant general benefit to naval programs, but it becomes a critical benefit during the periodic activity down turns between major naval new building programs.

Mr. FRICKS. Mr. Chairman, Newport News Shipbuilding, today, is not engaged in commercial shipbuilding, but we attempted to enter that market several years ago with less than favorable results.

Because of the subsidies overseas the world commercial market is not available to U.S. shipbuilders and the domestic market is not that large. Commercial shipbuilding, however, can be an supplement, and therefore be of some help in maintaining the industrial base, albeit, a small one. Additionally, the greatest benefit from such commercial shipbuilding is likely to take place in the two shipyards that build military ships that are closer to the design to a commercial ship, such as the auxiliary ships built for the U.S. Navy.

Mr. ST. PÉ. Litton Ship Systems has a very diverse background of commercial work over the past few decades—from drill rigs and hopper barges to tankers and cruise ships. We have found that unless the commercial product is selected to match a facility's workforce expertise and facility capitalization, there will be cost and schedule problems.

4. Senator SESSIONS. Mr. Fricks and Mr. St. Pé, it has clearly been Congressional intention for shipyards to start construction on long lead components when that construction will result in overall cost savings to the taxpayers. This committee initiated legislation which became law authorizing advance construction of components for aircraft carriers and large amphibious ships.

Has this legislation been useful in assisting you to smooth out your work load, retain skilled workers, and maintain established vendors resulting in overall cost savings to the government?

Mr. FRICKS. Mr. Chairman, this legislation has been useful at Newport News Shipbuilding. Specifically on CVN-77, we were able to use advanced funding for material to support the overall ship schedule, keep key shipyard workers engaged through what would have been a lull in activity, and deal directly with suppliers that were on the verge of economic collapse. Specific advanced funding material examples include the acquisition of main engines and turbine generators, long lead time items that would have adversely impacted our schedule for production if we had been required to delay those acquisitions until after contract award.

We also produced 39 structural units during the advanced planning period, keeping our steel fabrication workers busy and giving us a leg up on the production curve. Without this work, we would have had to reassign and then subsequently retrain these workers.

Finally, we were able to order special pipe fittings and machinery components from key suppliers that have suffered from the downturn in naval shipbuilding. Without these orders, some of these suppliers may well have gotten out of the Navy business requiring us to requalify new suppliers at substantial costs.

Mr. ST. PÉ. Certainly, Congress has done its part to assist shipbuilder with advance appropriation. Unfortunately, in many cases, the funding doesn't reach the shipbuilders in the steady stream intended by Congress. For example, in looking at LHD-8, Congress has, over the past 3 years, appropriated \$460 million for advance procurement, design and construction of advanced components. To-date, however, Litton Ship Systems has received only \$142.5 million of this funding. So while the legislation is certainly useful, its application has not matched expectations.

5. Senator SESSIONS. Mr. Welch and Mr. Fricks, *Virginia*-class submarine legislation included a section which limits termination liability for cancellation of a program to the appropriated amount remaining available for the program. Does this type of legislation help or hinder the shipyards and should that type of legislation be applied to other programs?

Mr. WELCH. Termination of a contract is a seldom used, but drastic action on the part of the government. The impact and implication on the shipbuilder being terminated is severe and could result in the closing of the shipyard during a period of low rate production.

Any legislation that restricts and limits the ability of the shipbuilder to recover reasonable costs is devastating. For example, the facilities required to construct naval ships are specialized, expensive, and recouped through depreciation over a number of years. If a program is terminated, the remaining cost recovery is diminished if not totally lost.

Limiting the liability that can be recovered in the event of a termination increases the risks to the business. Increased business risk results in lower valuation of the shipbuilder, which increases the cost of capital, which lowers earnings. Alternately, the government may be forced to accept a higher negotiated profit rate to accommodate the increased risk.

Notwithstanding the risks assigned to the shipbuilder by the termination liability provision, the overall authorization and appropriation acts for the *Virginia*-class did provide benefits, specifically the advance construction and advance procurement of material for the second, third and fourth *Virginia*-class submarines with the funds appropriated in 1998. This authorization provided program stability and flexibility. This aspect of the legislation should be expanded and included in other programs. This provision can also provide cost savings going forward.

Mr. FRICKS. Mr. Chairman, the legislation authorizing the procurement of the first four *Virginia*-class submarines specifically limited termination liability in the event of cancellation of the program to the appropriations remaining available for that program. This "block-buy" of the first four submarines did provide some more flexibility than a normal acquisition of four individual subs. However, this did not allow the most efficient use of appropriations that could have been available under a true multi-year procurement, because the shipbuilders, not the government, would have been liable for material contracts in excess of available appropriations—a risk the shipbuilders could not take.

6. Senator SESSIONS. Mr. Fricks, the Navy's report to Congress on converting design data on *Nimitz*-class aircraft carriers and developing a smart product model for CVN(X) concludes that it is cost effective to develop a smart product model for CVN(X) but is not cost effective to convert design data from previous carrier programs. What is your analysis of the cost effectiveness of 3-D computer designs?

Mr. FRICKS. Mr. Chairman, the return on investment of the up-front cost of developing a carrier smart product model is achieved through a combination of reduced manufacturing costs and reduced life cycle costs. For all new classes of ships, the Navy has determined that a smart product model is necessary to serve as the basis of the ship design to support construction, and then throughout the life of the class to maintain configuration and control of the model to maximize the potential for life cycle cost savings.

Working with the Navy, we were able to demonstrate a clear return on the investment for product modeling those portions of the *Nimitz*-class, which will be redesigned and built for CVN-77 and the CVN(X). We demonstrated that return by using data from the CVN-76 island house, which was completely designed and built using smart product modeling.

With respect to translating the entire existing *Nimitz*-class design into the smart product model, while we are sure it would provide some substantial benefit to life cycle costs, we have not yet been able to demonstrate a full return on the investment that would be required. Therefore, we have agreed with the Navy to focus scarce design dollars at those portions of the ship which are being redesigned.

7. Senator SESSIONS. Mr. Welch, Mr. Fricks, and Mr. St. Pé, the Navy has determined that there are valid claims for over \$522 million which must be paid in fiscal year 2001 to shipyards for programs that were appropriated and authorized in previous years. Of course, payment of additional funds for prior year shipbuilding expenses take funds away from current year shipbuilding programs. What is the cause of the prior year increases and is there a way to avoid or predict and budget for such cost changes in the future?

Mr. WELCH. The major factors contributing to required funding increases in Electric Boat's new construction contracts are: (a) cost escalation in the shipbuilding industry; and, (b) the effect of the declining vendor base on high value material.

- While government projections in escalation for the late 1990's and early 2000's used 1.5 percent to 2 percent escalation for labor indices, shipbuilders were experiencing and projecting 3 percent to 5 percent based on historical experience and negotiated union contracts.
- The reduction in vendors in the shipbuilding industry resulting from low rate production has also caused the trend in high value material to exceed the government funding escalation rates of 1.5 percent to 2.0 percent. Vendor quotes, for example, during the *Virginia*-class construction proposal process reflected escalation of approximately 6.0 percent per year. Purchase order placements on the *Virginia* construction program have validated this forecast.

Government predictions and budgeted costs in the future should be industry specific in order to avoid the necessity of increasing funding amounts as programs progress.

Mr. FRICKS. Mr. Chairman, we do not have access to the numbers that may relate to other companies programs, nor do we have access to Navy's numbers with respect to government furnished equipment, and therefore, I cannot comment on the totals you cite.

However, I expect that all of this short fall arises for one or more of the same reasons I have cited in my formal testimony regarding the carrier and submarine programs—and is probably because one or more of the shipbuilding fundamentals I cited in my formal testimony is missing. Specifically, lack of stable production plan, numerous design or manufacturing changes coming late in the process, less than realistic targets for the shipbuilder, and overly optimistic estimates on escalation all contribute to this kind of short fall.

Mr. ST. PÉ. As I said in my testimony before the subcommittee, procurement environments historically encourage unrealistic cost estimates. Over-optimism by the Navy, by Congress, and by industry often produces unrealistic cost and schedule estimates for first-of-a-class vessels—estimates done, in most cases several years before those ships are built. More than in any other industry, the cost and schedule estimates we provide in a competition for a lead ship contract are just that—our best estimates, based on what we know at the time. Why are these estimates so fragile, and so often understated? Very simply, because there are no prototypes in shipbuilding—not even when you consider some of the critically important computer simulation and modeling work we're doing these days. There are no competing concept “fly offs.” The first ship built to every new design—the lead ship of every class of Navy warships—would be considered, in every other industry, a testbed prototype . . . a research and development platform. Instead, in shipbuilding, the first built—the prototype—takes America's sons and daughters into harm's way. That is a cold, simple fact of life in shipbuilding. As is the length of time it takes to design and build these ships—4, 5 or 6 years after the estimate was originally completed. This “working prototype” factor must be taken into account in discussing ways to improve the acquisition process for ships. We must take a long-term approach, such as the approach that was so successful in CGs and DDGs. We absolutely must recognize that large, front-end investments can only be recaptured and maximized by allowing programs to run uninterrupted, with sustained levels of program and financial support.

8. Senator SESSIONS. Mr. Welch, Mr. Fricks, and Mr. St. Pé, in your opinion, what acquisition reforms would result in lower costs for ship acquisition programs?

Mr. WELCH. There are a number of acquisition reform areas which have the potential to lower either the cost of ship procurement or total ownership costs:

- While not acquisition reform per se, a stable, predictable ship acquisition profile would inevitably lead to lower costs as builders were enabled to make productivity-enhancing improvements, facilities and equipment were sized for effective utilization rates, and the costs of cyclic employment patterns were reduced. This is not to imply that stability in and of itself is a

panacea, or that other changes such as sharing of outyear savings resulting from capital expenditures wouldn't be required.

As noted in my response to question #1, the best way to achieve stability in procurement would be to enter into multi-year acquisition contracts for appropriate programs. This might require reform or revision of current acquisition guidelines, which may have been appropriate in the high procurement demand/full capacity utilization environment of the cold war build-up to a 600-ship navy, but do not reflect the realities of today's low rate production environment.

- Acquisition reforms which lead to greater integration of the ship designer/builder into the life cycle support of the delivered vessels will also have significant payoffs. Segregation of design and/or construction contractors from provision of life cycle maintenance makes effective cost/benefit trade-offs by the designer/builder difficult. Funding levels and contract values established for a particular acquisition item may preclude implementation or even consideration of initiatives which could result in total ownership cost reductions. The Full Service Contractor approach has the potential to correct this problem, and in fact the LPD-17 acquisition appears to be just such a success story (recognizing that the up-front procurement cost may not go down—but the aggregate outlays certainly will, during the operational service life of the ship class).
- The move to performance-based specifications as opposed to how-to prescriptions has already resulted in significant cost savings, and further moves in this direction should be encouraged. The recent initiative to cancel obsolete or unnecessary MILSPECS, and replace them with existing commercial specifications where appropriate, has also been beneficial. It should be noted, however, that some issues have arisen when different suppliers or specific industries use different criteria or standards for related products.
- Greater responsibility by the ship designer/builder for selection, integration, and purchasing of shipboard systems and components is another area which has great potential to reduce overall ship procurement costs. This change can eliminate potential disconnects and incompatibilities in the final product, reduce parochialism and sub-optimization by independent government codes/systems contractors, and encourage commonality across system and component boundaries.

Mr. FRICKS. Mr. Chairman, having a stable shipbuilding program is high on everyone's list for achieving lower acquisition costs. Stability allows companies to better plan their resources, facilities utilization, capital investment and helps maintain the supplier base. Giving companies the confidence that the build program is stable will benefit the entire industry.

Next, the Navy should be authorized to use multi-year contracting where appropriate. When multi-year contracting may not be appropriate, some level of advance planning and advance construction should be authorized. These concepts are complementary to advance appropriations, which, if done properly, would minimize funding spikes over the 5-year defense plan.

I further believe that acquisition costs can be reduced if non-value added oversight could be eliminated, and changes to work scope were minimized. Each of these areas is very complicated to deal with and would require a great deal of industry and Government teaming to study how and what cost could be lowered.

To summarize, give the shipbuilders a stable program, establish realistic targets, minimize change and provide appropriate funding mechanisms, then the acquisition cost will be lower.

Mr. ST. PÉ. The Government is examining a number of different ship funding options. Advance material procurement . . . block buys . . . multi-year procurement . . . advance appropriations . . . are all potentially useful tools you can employ to stabilize shipbuilding programs and reduce their cost. We have direct experience with only one of these approaches—multi-year procurement on the DDG-51 program. Multi-year has saved the taxpayers more than \$1 billion in the procurement of these ships at Ingalls and Bath Iron Works. We fully support funding approaches that lead to more ships being constructed, under stable procurement and production profiles.

9. Senator SESSIONS. Mr. Welch, Mr. Fricks, and Mr. St. Pé, has the Maritime Technology Program, now named the National Shipbuilding Research Program, been successful in providing improved processes resulting in lower ship acquisition costs?

Mr. WELCH. Yes it has. The National Shipbuilding Research Program Advanced Shipbuilding Enterprise program is designed to bias R&D project selection toward

those most likely to result in near term, widespread implementation, and in turn, lower ship acquisition costs. Through these projects, shipyards have moved R&D projects into full production, launched an industry e-commerce net, standardized business processes across many shipyards, improved worker safety, and changed the culture of the work force. This high-leverage, broad, collaborative approach provides industry-wide improvements on the scale necessary to yield much more affordable Navy ships and move U.S. shipbuilding to a more competitive position internationally. Improvements made now before production of DD 21, T-AKE, CVN(X), and other programs planned in the decade (and early in the production of *Virginia* and LPD-17) will prove particularly valuable to the Navy.

Mr. FRICKS. Mr. Chairman, Newport News Shipbuilding supports continued funding for NSRP to continue its research efforts on new ship technologies and on technical productivity improvements.

We have seen direct benefit at NNS from NSRP initiatives in the areas of improved supply chain processes, which have reduced cycle time and man-hours, and in the creation of lighter weight built-up structural stiffeners, which were needed to meet CVN(X) performance criteria.

Mr. St. PÉ. I noted in my testimony that Ingalls' cruise ship programs would not be possible without DOD's former MARITECH Program, now known as the National Shipbuilding Research Program, or NSRP, which enabled Ingalls to learn about and observe cruise ship building practices around the world. Without question, the "lessons learned" in cruise ship building will pay great dividends for the Navy and the American taxpayer in future Navy shipbuilding programs such as DD 21. We strongly support NSRP, and encourage its consistent and full funding.

10. Senator SESSIONS. Mr. Fricks, a January press article on an agreement between the Navy and Newport News Shipbuilding reported that the Secretary of the Navy "expressed frustration with Newport News's failure to deliver promised cost saving." It further stated that the Secretary was "pressuring them for the rest" of the agreed to savings. Mr. Fricks would you please clarify what the agreement with the Navy is and whether or not Newport News has lived up to the agreement?

Mr. FRICKS. Mr. Chairman, I must say I found that report somewhat perplexing. First it was reported only after the Secretary in question had left office and that same Secretary had expressed no such frustration a month earlier when I met with him and briefed him on how we had met or exceeded our savings target in the MOA for the second year.

The 1999 MOA is an agreement with the Navy to work together to reduce our overall costs by about \$350 million over the 5-year period of 1999-2003 through a number of productivity and cost cutting initiatives. Many of those initiatives were in place before the agreement was signed. The first year of that agreement we agreed to reduce our costs by \$25 million from what they would otherwise have been—we beat that target by almost \$7 million.

In 2000, we agreed to further reduce costs by another \$55 million and we met or exceeded that target. We have worked with the Navy to embed these and future additional reductions into existing and future contracts.

I would also note that less than a week after that first report, the Carrier Program Executive Officer told the press that the earlier report was inaccurate and that we had met or exceeded our goals.

QUESTIONS SUBMITTED BY SENATOR JIM BUNNING

11. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, when, and how often did you report to this committee your concerns regarding the level of funding for shipbuilding over the last 9 years?

Mr. WELCH. The following identifies when a General Dynamics executive testified to a Congressional Committee on submarine or shipbuilding since 1992:

- February 19, 1992, Electric Boat General Manager Roger Tetrault testified on the Structure of the U.S. Defense Industrial Base to the House Armed Services Committee. The testimony focused on the impact of the *Seawolf* submarine program cancellation at Electric Boat and the Submarine Industrial Base.
- April 1, 1992, Electric Boat General Manager Roger Tetrault testified to the Senate Armed Services Committee on the rescission of the SSN-22 and SSN-23 *Seawolf* submarines and the impact to Electric Boat. Questions from the committee focused on the incremental cost estimates for completion of SSN-22 and SSN-23 and the minimum production level to sustain the submarine industrial base.

- April 7, 1992, Electric Boat General Manager Roger Tetrault testified to the House Armed Services Committee on the rescission of the SSN-22 and SSN-23 *Seawolf* submarines and the impact to Electric Boat. Questions from the committee focused on the incremental cost estimates for completion of SSN-22 and SSN-23 and the minimum production level to sustain the submarine industrial base.
- May 27, 1993, Electric Boat President, James E. Turner, Jr. testified to the Senate Appropriations Defense Subcommittee on the issue of Defense Conversion. Electric Boat's testimony discussed the reasons why the Submarine Industrial Base is not a viable candidate for conversion or dual-use.
- March 16, 1995, Electric Boat President, James E. Turner, Jr. testified to the House National Security Military Procurement Subcommittee on the overall acquisition plan for the New Attack Submarine program.
- April 5, 1995, Electric Boat President, James E. Turner, Jr. testified to the House Appropriations National Security Subcommittee on the overall acquisition plan for the New Attack Submarine program.
- May 16, 1995, Electric Boat President, James E. Turner, Jr. testified to the Seapower Subcommittee of the Senate Armed Services Committee on acquisition plan for the New Attack Submarine and attack submarine program issues.
- February 29, 2000, General Dynamics Marine Systems Group Senior Vice President, John K. Welch, testified to the House Armed Services Committee Procurement Subcommittee on Navy shipbuilding and the adequacy of Navy shipbuilding budgets. Testimony pointed out the need for additional shipbuilding funding, especially submarines, to meet the then current QDR force level goals and the need for additional ships above QDR levels to meet military requirements.
- March 2, 2000, General Dynamics Marine Systems Group Senior Vice President, John K. Welch, testified to the Senate Armed Services Committee Seapower Subcommittee on Navy shipbuilding and the adequacy of Navy shipbuilding budgets. Testimony pointed out the need for additional shipbuilding funding, especially submarines, to meet the then current QDR force level goals and the need for additional ships above QDR levels to meet military requirements.
- April 4, 2001, General Dynamics Marine Systems Group Senior Vice President, John K. Welch, testified to the Senate Armed Services Committee Seapower Subcommittee on Navy shipbuilding and issues impacting the shipbuilding industrial base. Testimony underscored the need for greater stability in Navy shipbuilding plans and increased application of alternative acquisition approaches such as multi-year procurement and advanced appropriations.

Additionally, the six U.S. Navy shipbuilding companies are members of the American Shipbuilding Association (ASA)—our industry's national trade association. We have both collectively through ASA and individually sought to bring to the attention of national decision makers for a number of years the fact that annual Navy shipbuilding budgets have increasingly failed to keep pace with validated operational and military force structure requirements.

We have tried to communicate that message on a nonpartisan basis. We have taken advantage of opportunities provided to testify before several of Congress' defense committees over the years on this problem and on our industry's response to low levels of production.

- The ASA has held a series of widely attended Congressional Seapower Forums on Capitol Hill open to Members of Congress, Congressional staff, and the media, to bring attention to the fact that Navy shipbuilding budgets have failed to sustain even the minimal level of new ship construction required to sustain a Navy fleet of 300 or more ships. Additionally, the ASA initiated an outreach program called the SEAPOWER Ambassador program in early 1998, which is still in operation today. The SEAPOWER Ambassador program conducted in conjunction with the U.S. Navy League has asked retired naval officers and community leaders who share our concern to volunteer to speak to local civic organizations about the crisis confronting the Navy Fleet and our national security from current inadequate Navy shipbuilding rates. We continue to seek more effective ways to get the general public and national decision-makers more aware of the SEAPOWER crisis confronting our Nation.

Mr. FRICKS, I, along with John Welch, testified before the Senate Seapower Subcommittee in the spring of 1995. The subject of that hearing was, among other

things, the low rate of submarine production. The full transcript of that hearing is available in the committee's records.

However, during the past 9 years, I and other senior members of Newport News Shipbuilding have probably had countless of conversations with members of this and other defense committees concerning the decline in the shipbuilding industrial base and the decline in the number of ships in the Navy fleet.

Mr. ST. PÉ. (Mr. St. Pé's answers to questions 11–18 follow): As a shipbuilder, I would not presume to determine the fleet requirements for our national defense. I do, however, respond to these requirements by ensuring that my shipyards have the manpower, technology and efficiencies to meet them. Based upon studies produced by the Department of Defense, CBO, and independent "think tanks", the current requirement calls for a 300-ship fleet. In order to maintain a 300-ship fleet, we must build 10–12 ships per year. At the current build rate, our fleet will decline to a 200–220 ship fleet. Although members of the Seapower Subcommittee historically have been supportive of sustaining a 300-ship fleet, the ships actually procured have been half the required number.

Shipbuilding has been on a steady decline and the industry has responded to this trend by increasing efficiencies, streamlining costs and consolidation. In 1999, testifying as the President of the American Shipbuilding Association, I reported to this committee my deep concern that "the low rate of shipbuilding clearly is impacting not only maintaining a 300-ship fleet, but producing the kind of savings that we all know can come about from sustained business in any manufacturing operation. Our own numbers say that if we are to maintain a 300-ship Navy, we need to build at a rate of about 10–12 ships. The six shipyards that are represented by ASA have spent about \$1.3 billion in bringing into our facilities state-of-the-art technology to reduce overhead and improve efficiency. Our message here this morning is that the rate of shipbuilding has to increase in this country, and it has to start soon."

Over the past decade I have brought forward this message to Congress, Department of Defense, and the general public both personally—through testimony before several defense committees, personal meetings with Navy and DOD leadership, and professional staff members—and through the shipbuilding industry's trade association—The American Shipbuilding Association (ASA). The American shipbuilding industry, comprised of the six shipbuilding companies and top vendor partners, has held several Seapower Forums open to Members of Congress, staff and media in an attempt to bring attention to the declining shipbuilding rate that will, if allowed to continue at this pace, see a 320-ship fleet reduced to 200. The Seapower Ambassador program, a joint effort between ASA and the Navy League of the U.S. has worked to educate the general public on the crisis we face with a declining naval force and the consequential risk to the shipbuilding industrial base.

The Senate Armed Services Committee and the Seapower Subcommittee have been helpful in their attempts to reverse this trend by bringing attention to the gap between current requirements and proposed budgets, particularly by preventing the DDG program from slipping from the authorized three ships per year to two ships per year; by completing the procurement of LHD-7 and providing long-lead funding for the LHD-8 program. The shipbuilding industry appreciates the efforts extended by all members of the committee and look forward to working together in the future to reverse the bow-wave decline in shipbuilding.

12. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, what did you say each time?

Mr. WELCH. Testimony stressed the need for program stability and increased shipbuilding procurement rates to preserve or optimize the then current ship procurement plan.

Mr. FRICKS. I do not have a record of what was said on each of these occasions. However, I have no doubt that members of this committee were fully aware of the concerns of the naval shipbuilders about the decline in the Navy shipbuilding industrial base.

Mr. ST. PÉ. (See answer in question number 11.)

13. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, what responses did you receive from the committee members, either within or outside of the hearing context?

Mr. WELCH. Committee members were sympathetic to the issues impacting the shipbuilding industrial base as a result of the cut-backs in procurement and low rates of production. In 1992, key committee members were instrumental in reversing the funding rescission for the second and third *Seawolf* submarines, thus ensuring the preservation of critical skills and capabilities for the submarine industrial base. More recently, the Senate Armed Services Committee and the Seapower Sub-

committee have taken a leadership role in trying to highlight this worsening problem and to propose and authorize specific actions to address the situation. The leadership and members of the committee on both sides of the aisle have urged the uniformed leadership of the Navy and Marine Corps to be more candid with the committee in testifying about the growing mismatch between requirements and budgets.

As an example of this committee's action in previous years to reverse the Navy and this industrial base's decline, it was this committee and subcommittee which first acted to respond to a budget proposal several years ago to reduce DDG-51 destroyer procurement in fiscal years 1996 and 1998 from 3 ships per year to 2 ships per year. This committee took the lead to sustain the 3-destroyer per year procurement rate and to authorize and fund a 4-year multiyear procurement of DDG-51s from fiscal years 1998-2001 which helped the Navy and industry sustain the 3-ship per year procurement rate. In the last two sessions, this committee and subcommittee took the lead to statutorily extend the DDG-51 program's multiyear procurement authority through fiscal year 2005 at a rate of three destroyers per year. This committee has also been active in addressing submarine force level requirements, approving the successful teaming arrangement for the *Virginia*-class submarine program, and requiring the government's evaluation of new contracting strategies, such as block buy for submarine procurement.

Further, this committee and subcommittee took the lead to require that the Department of Defense produce a 30-year projection of required shipbuilding rates and budgets to sustain the current requirement for a Fleet of at least 300 ships. These examples are by no means a full accounting of the many positive actions this committee and subcommittee have taken over recent years, but they are illustrative of the broad-based concern shared among committee members.

Mr. FRICKS. I do not have records of the specific responses we received from committee members during the course of these numerous discussions. However, as has been the case in this hearing today, there was general agreement amongst members of this committee and other defense committees that there was a serious problem developing in the Navy shipbuilding industrial base.

Mr. ST. PÉ. (See answer in question number 11.)

14. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, what other avenues did you pursue, such as the Navy or the Department of Defense, to express your concern regarding the level of funding for shipbuilding over the last 9 years?

Mr. WELCH. General Dynamics has pursued an aggressive communication plan to educate, inform, and garner support from all stakeholders in Congress, Navy and DOD for increased shipbuilding levels and requisite funding. This activity has been supported and conducted with the other shipbuilders and industry groups such as the American Shipbuilding Association. On issues such the adequacy of overall SCN funding, General Dynamics relies heavily on our trade association, the American Shipbuilding Association (ASA), to deliver the message to Congress, including the SASC. The principal reason for the formation of ASA in 1994 by the six largest U.S. shipyards was to focus on the issue of inadequate SCN.

Mr. FRICKS. Over the last 9 years, I and other senior officers of Newport News Shipbuilding have probably had countless of conversations with numerous officials within the Department of the Navy and the Department of Defense concerning the dwindling size of the U.S. Navy fleet and the problems this was creating in the Navy shipbuilding industrial base.

In addition, over the last 4 years the American Shipbuilding Association, a trade association, composed of the six Navy ship construction shipyards, has spent several hundred thousand dollars in efforts to educate Congress and the public about the dwindling Navy fleet and the problems existing within the Navy shipbuilding industrial base.

Mr. ST. PÉ. (See answer in question number 11.)

15. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, what did you say those times?

Mr. WELCH. Our message has been consistent over the last 9 years:

- Stability is key to ship production efficiency and affordability.
- Current low rates of production are not the most efficient or affordable to recapitalize the Navy's force structure.
- Congress, Navy, DOD and the shipbuilders must continue to be vigilant to ensure irreversible harm is not inflicted on the industrial base as a result of poor acquisition decisions or less than optimal industrial base strategies.

Mr. FRICKS. I do not have a record of these thousands of conversations, but I do believe that there was general agreement within the Navy if not also within the Department of Defense, that the Navy fleet was becoming too small and that the ship procurement rate was too low, resulting in problems in the Navy shipbuilding industrial base.

Copies of some, if not all, of the communications by the American Shipbuilders Association, with Members of Congress on these issues may be obtained from that Association.

Mr. ST. PÉ. (See answer in question number 11.)

16. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, what responses did you receive?

Mr. WELCH. Congress, Navy and DOD have generally been supportive of our recommendations, although actions to remedy the industrial base situation have been impacted by overall lower defense spending and competition within the defense budget for higher priority requirements such as readiness.

Mr. FRICKS. I do not have a record of these numerous conversations, but I do believe there was a growing consensus within the Navy, the Department of Defense and the defense committees of Congress that ship procurement rates needed to be increased.

Mr. ST. PÉ. (See answer in question number 11.)

17. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, were there other ways that you could have raised your concerns over this issue, but didn't? If so, what were they? Why didn't you?

Mr. WELCH. No other means are apparent which could have more effectively raised our concerns over this issue. We believe that the shipbuilders, industrial base suppliers, Navy and key Congressional representatives have clearly communicated the concern and risks posed by the last decade's low rates of ship procurement and associated SCN funding.

Mr. FRICKS. I am not aware of any other specific avenues that I could have pursued to raise our concerns over these issues.

Mr. ST. PÉ. (See answer in question number 11.)

18. Senator BUNNING. Mr. Welch, Mr. Fricks, and Mr. St. Pé, was there any concern regarding the inadequate funding levels for shipbuilding, requested by the Clinton administration, from the Democratic members of this committee, prior to the arrival of the current administration?

Mr. WELCH. Concern regarding the low levels of funding for shipbuilding (as submitted by both the former Bush administration and the Clinton administration) have been shared by members of both parties over the last decade. Members of the Congressional defense committees from both parties have expressed their concerns in opening statements or during the hearings identified in response to Question 11.

Mr. FRICKS. Yes, during the past several years, a number of Democratic Members of this committee have joined with a number of Republican Members in expressing concerns about the low levels of Navy shipbuilding.

Mr. ST. PÉ. (See answer in question number 11.)

QUESTIONS SUBMITTED BY SENATOR EDWARD M. KENNEDY

19. Senator KENNEDY. Mr. Welch, Mr. Fricks, and Mr. St. Pé, this committee has supported robust technology insertion efforts for shipbuilding programs. The subcommittee's position has been that the Navy cannot afford to wait for the ultimate in technology to continue modernizing the fleet.

Some, however, have charged that inserting technology inevitably results in much higher costs and delays in production.

I would ask each of the witnesses, are there ways that the Navy can pursue a technology insertion approach, while still achieving the cost savings of serial production?

Are there ways we could improve the programs that are currently pursuing a technology insertion effort?

Mr. WELCH. It is the experience of the shipbuilding industry that anytime you build a ship for the first time you will not be as efficient as when you build it for the fifth time. With that said there are some approaches to technology insertion that can help to mitigate the impact of change to the cost and schedule of a ship class that is in production. These approaches are as follows:

- *Employ Integrated Product & Process Development Process (IPPD) for Major Ship Upgrades:* Electric Boat and the Navy have demonstrated the success of applying an Integrated Product & Process Development Process for a major warship acquisition, the *Virginia*-class submarine. The IPPD approach involved bringing the stakeholders together (including the shipbuilder) at the beginning of the design process to work the concurrent development of design products, tools and processes as well as construction support products based on an optimized manufacturing & assembly plan. With this approach, Electric Boat and Newport News Shipbuilding have achieved third ship performance on the traditional learning curve with the lead ship *Virginia*.
- It should also be noted that the *Virginia* program introduced significant new technology and innovation over previous classes which is a testament to the value of an IPPD approach to technology insertion. In addition, involving the trades early in the design process, results in a more producible design and reduces the risk of change during construction. IPPD for technology insertion should be supported in the future with funding profiles and contracts that provide this type of implementation.
- *Insert Major Upgrades at the Start of a Multi-ship Procurement:* Electric Boat supports an approach to technology insertion that bundles technologies into synergistic packages and couples these packages with a multi-ship acquisition plan. This "Flight/Block Buy approach" provides an affordable acquisition strategy for the Navy by enabling the shipbuilders to derive the same design-build efficiencies in design, co-production and procurement as realized during the baseline *Virginia* IPPD program.
- In addition, the approach would also encourage industry to continue investment into new tools and processes to reduce the cost of design and construction by allowing the investment across a block of ships rather than a single ship.
- *Leverage Other DOD Programs and Support Government/Industry Partnerships:* Electric Boat and a diverse team of suppliers have been supporting a joint DARPA/Navy initiative that was formed to develop approaches to improve payload and sensors for future submarine designs. Having successfully completed the objectives of the initial phase, two teams are working to select promising high value concepts and to develop and demonstrate new systems from these concepts in an at-sea environment.
- Many of the payload systems being considered by the DARPA/Navy Payload and Sensor Teams are being developed in other branches of the service—an approach that reduces development and total ownership cost yet will provide for the affordable introduction of technology across many diverse programs with the DOD.
- Tactical Tomahawk is one example of a technology insertion with broad implications across many programs. Electric Boat recommends that Congress continue to support increased R&D funding for technology insertion demonstrations using these kinds of collaborative arrangements.
- *Use Commercial-Off-The Shelf (COTS) Electronics:* One of the most significant developments in Navy warship production relative to technology insertion is the introduction of COTS technology. During the *Virginia*-class development program, Electric Boat pioneered efforts to develop innovative approaches to house COTS electronics in the demanding submarine environment. Efforts to date are now paying significant dividends on *Virginia* as the ships electronics systems have been designed based on the use of commercial technology.
- These same systems are able to take advantage of the significant growth in computer, communications and display technology that is available in the commercial sector without significantly impacting the platform design. Therefore, Navy warships can continue to be affordably upgraded with new technology and capability without any significant impact to ship construction. Platforms that utilize COTS electronics if properly accommodated at the start of a design will enjoy affordable technology insertion without impacting the efficiencies of serial production.

Mr. FRICKS. As I pointed out in my formal testimony, changes in ship design, especially those coming very late in the process are very costly. We are constantly working with the Navy in order to fully define technologies to be included in the ships we build. On CVN-76, we are using an innovative approach called "design budget" under which early decisions are made regarding the size and shape of various ship compartments along with the required heating, mechanical and electrical requirements of those spaces, while the technology is being developed separately.

This approach permits the shipbuilder to proceed in an orderly fashion with the design and construction of the ship, while permitting the Navy to delay its final determination as to the exact technology to be included in such spaces.

On CVN-77, we are expanding our traditional shipbuilder's role to include full development and integration of the warfare system, a first for private industry. We will build upon our CVN-76 design budget model experience to establish a schedule for effective design and integration of this system working with our sub-contractor, Lockheed Martin. This strategy also utilizes the Virginia Advanced Shipbuilding and Carrier Integration Center (VASCIC), a new facility funding by the Commonwealth of Virginia and managed and operated by Newport News Shipbuilding. VASCIC will provide the capability to do full scale testing of technology much later in the construction program and thereby lower the risk associated with shipboard installation of electronic components.

Mr. St. PÉ. Both the CG-47 cruiser and DDG-51 destroyer programs are excellent examples of how technology insertion can be done in shipbuilding programs without driving up the acquisition cost or delaying production schedules. Both of these programs have multiple "flights" of ships with each successive flight more capable than the previous flight due to a successful technology insertion program. These programs have been successful with technology insertion because the insertions were timed so that the technologies were mature enough in development when the decisions were made on when the technology was to be inserted. Stable funding and building rates also contributed by ensuring we could retain sufficient experienced engineers to complete the integration of new technology.

20. Senator KENNEDY. Mr. Welch, Mr. Fricks, and Mr. St. Pé, there has been much discussion of ways to streamline the acquisition process. One of the reforms of the last several years was to institute so-called "integrated process teams" or IPTs in major acquisition programs. IPTs were intended to give greater transparency into the acquisition process, particularly so we could prevent cost and schedule problems that we had found in previous programs. The IPT process seems to have worked well in certain programs, perhaps not so well in others.

I would note, however, that the existence of the IPT process in the LPD-17 program has not prevented problems in the program. There may be other programs where the new approach did not work perfectly.

This is not an appropriate forum within which to review problems on specific programs. Nevertheless, I would like to hear from each of our witnesses on the "process."

Can you tell us if you believe that there is a systemic problem with the implementation of the IPT process?

Are there changes we need to make to acquisition reform to correct the lack of visibility that we had hoped to achieve through the "lens" of the IPT process?

Mr. WELCH. We believe there is no systemic problem with the implementation of the IPT process. We believe that, as in any new approach, the success of the implementation is directly related to the commitment of the total team. As successes, such as *Virginia*-class submarines, become more common, there will be more believers, which will bring more commitment, which will bring more success. This is not being critical of any program or team, just our observation on human nature that not all new approaches are equally embraced and are equally successful in every company and every situation.

Mr. FRICKS. I do not have anything to add to this question.

Mr. St. PÉ. The IPT process has had varying degrees of success. The more complex the program the greater the challenge for the IPT. In the LPD-17 program, the Government was allowed to participate in Team meetings, but was restricted from participating in decision making or any action where they could assume liability. The government chose to work around this limitation by influencing program direction and team decision making through the award fee process. The anticipated benefit of onsite Government/Alliance decision making was not realized as planned for in the Alliances bid proposal.

Developing a new design tool, and training people to use this new tool on a non-concurrent basis, added time to the planned schedule. This added unplanned for time to the design schedule. Similarly the IPDE schedule was rigidly adhered to (required to be fully operational within 18 months of contract award) despite the lack of user input until the training was complete. Finally, the Government mandated a focused effort to gather significant Fleet input to the design during the first year of the program. This effort was out of scope (unplanned effort) for the Alliance. This Fleet input drove implied requirements, which the onsite government team members imposed into the design acceptance criteria. I recommend we avoid these pitfalls with future IPTs.

21. Senator KENNEDY. Mr. Welch, Mr. Fricks, and Mr. St. Pé, each of you have indicated in your testimony how important it is to achieve stability in the shipbuilding program for you to be efficient. One way of achieving some stability is through the use of multiyear contracts. Among the criteria that we use in evaluating proposals to enter into multiyear contracts are the following:

- The program has a stable design and minimal technical risk; and
- The program has realistic cost estimates.

Not all ship programs would meet these criteria, particularly those early in their acquisition cycle.

Do any of you believe that these criteria need to be changed?

Are there other metrics that we should be using in evaluating shipbuilding programs for the purpose of providing longer term funding?

Mr. WELCH. A stable design and minimal technical risk for near-term activities and/or early ships of a contract is critical to the multi-year contracting process. Without stability in these areas, increased rework and surplus material will offset multi-year contract savings as the inevitable design iterations occur.

However, as noted in the response to question 31, a multi-year contract is the most effective approach to introducing block changes or inserting new technologies into a class already in production. These changes/insertions must be based either on developed designs and matured technologies, or be planned for insertion into whatever ship in the batch can accommodate the changes with an acceptable level of risk.

Fully accurate cost estimates are not necessarily a requirement prior to multi-year procurements. The basic economic order savings are inherent to the process regardless of the estimate quality for current or future work. Reduction of non-recurring costs, vendor base stability and other benefits will occur regardless of the “reality” of current cost estimates.

Other metrics that should be used in evaluating shipbuilding programs for long term funding projections include:

- The criticality of the program to preservation of key elements of the shipbuilding industrial base, including design and production capabilities, production capacity, and essential personnel.
- The probability that the multi-year procurement profile will approximate the profile which would be arrived at if funded on an annual basis, i.e. if there's a reasonable chance that at least as many ships as are covered by the multi-year contract will be procured over the subject timeframe.
- Long term inflation and escalation trends, the impact of which may be mitigated by advance or long-range procurement.
- Industry consolidation efforts which may result in additional cost savings from synergies or elimination of redundancies multi-year contracts can provide the incentive for companies to make the near-term expenditures associated with such long-term beneficial consolidations.

Mr. FRICKS. I believe that the existing multi-year contract criteria should be reviewed with ship procurement in mind. The existing criteria were defined for programs other than shipbuilding. While I recognize that multi-year contract authority makes the Government liable for termination costs in the event that the program is ultimately cancelled, perhaps for reasons of technical risk or excessive cost, it still provides the most efficient use of the Government's money when multiple ships are to be procured.

While I probably would not support the use of multi-year authority for the procurement of the lead ship of any class, I believe consideration should be given to changing the criteria for such procurement with respect to ships so that it could be used after a substantial portion of the lead ship of a class has been constructed.

Mr. ST. PÉ. The criteria are reasonable except when the government desires technology insertion throughout the life of the program. In these circumstances the definition of “stable design” and “minimal technical risk” may come into conflict with the desire to have the latest technology. The definition for these terms should be clearly established before program initiation and remain fixed throughout the life of the program.

22. Senator KENNEDY. Mr. Welch, Mr. Fricks, and Mr. St. Pé, a couple of the prepared statements mentioned the National Shipbuilding Research Program, or NSRP. I believe that this was formerly known as Maritech.

I understand that the funding that is likely to be available in the fiscal year 2002 budget would only support completing prior year programs, and would not support any new NSRP initiatives.

Could each of you mention some examples of your successes in the NSRP or Maritech program for the record?

Are there other projects you have in mind that you would submit for NSRP funding if money were available? Can you give us any examples?

Mr. WELCH. Electric Boat and four other shipyards are collaborating with IBM to implement e-commerce that will accommodate legacy computer systems. The 3-year Shipbuilding PARTners and Suppliers (SPARS) project is delivering a series of e-commerce tools built on industry-consensus business processes and operated on a server system for the shipbuilding and repair industry. The first tool developed was designed to reengineer and speed the Vendor Information Request (VIR) process. This process is the communication mechanism used by the vendor and the shipyard from purchase order placement to item delivery. Early evidence of savings in this historically paper and time intensive process has led Newport News and Electric Boat to purchase parts, working with seven different suppliers, using the SPARS VIR process for the *Virginia*-class. To date, 374 VIRs have been submitted electronically using the SPARS process. 292 of them have been closed—resulting in a demonstrated cycle time reduction of 63 percent (30 day average, now down to 11 days) and a 54 percent drop in the number of VIRs needed due to the improved process. In addition, a SPARS bidding system prototype has been demonstrated at Bath Iron Works. Ingalls and Avondale recently installed the system and will pilot several implementations over the coming months.

As a result of Bender Shipbuilding and Repair's NSRP ASE project success in demonstrating and implementing the practical application of laser steel cutting, Electric Boat is working with the Office of Naval Research on the Advanced Steel Fabrication Processes project. The Bender project has exhibited an 8 percent reduction in steel plate usage, a 30 percent reduction in steel cutting costs, and a substantial drop in fitting and welding labor. The vision of the Electric Boat research project is the elimination of the dependency on two-dimensional drawings in the structural fabrication process. This project receives funding through ONR's Shipbuilding Initiative, which is a cooperative effort between ONR and NSRP to connect the shipbuilder's needs, as identified in the NSRP Strategic Investment Plan, with the technical capabilities of the Navy Maritech Centers of Excellence. NASSCO, through the NSRP ASE World Class Manufacturing Model project, produced a methodology for a best practice ship manufacturing model. The Manufacturing Model provides a roadmap for shipbuilder process assessment and improvement through the application of lean design and ergonomic principles. Electric Boat is currently in the early stages of applying NASSCO's demonstrated success to the construction of the *Virginia*-class.

Having gained significant experience and results from creating the infrastructure of advanced tools known as Integrated Product Data Environment, we are ready to take the process, people and tools to a very much higher level. More effective interconnection, incorporation of new capabilities, more automation of the underlying engineering analysis, and direct incorporation of the specs and design rules can take the successes of "design-build" to an environment of "conceive-develop-engineer-design-build-support." The result is the Next Generation IPDE or Collaborative Design-Build-Maintain. Its qualities include remote collaboration, rule-based design, enhanced product model, intensive simulations, and high-end integrated analysis.

Because the funding for NSRP was cut back in fiscal year 2001, the annual solicitation for new projects for fiscal year 2002 was very limited. Participating shipbuilders have specific projects in mind should additional funding become available.

Mr. FRICKS. Newport News Shipbuilding supports continued funding for NSRP to continue its research efforts on new ship technologies and on technical productivity improvements.

We have seen direct benefit at NNS from NSRP initiatives in the areas of improved supply chain processes, which have reduced cycle time and man-hours, and in the creation of lighter weight built-up structural stiffeners, which were needed to meet CVN(X) performance criteria.

Furthermore, you are correct in that we believe that the amount of funding that will be included in the fiscal year 2002 budget for NSRP would not support the initiation of any new projects. For that reason, we support the efforts of NSRP to add \$10 million of additional funding for this program.

Mr. ST. PÉ. The Maritech, now NSRP, Program has been extremely beneficial. This program permitted Ingalls to study cruise ship design and construction techniques used in Europe and successfully compete for the construction of the first large cruise ships built in the United States in 40 years. This study gave us insights for optimizing our facilities for construction of these ships, and helped us develop an investment program of over \$150 million in capital improvements in our facilities that are already benefiting not only our commercial work, but our U.S. Navy work as well. Laser steel cutting and thin-plate steel welding technology are two other

examples of successful NSRP funded technology. With adequate funding for NSRP we hope to pursue development of industry-wide design tools in the future.

QUESTIONS SUBMITTED BY SENATOR JOSEPH I. LIEBERMAN

23. Senator LIEBERMAN. Mr. St. Pé and Mr. Welch, the Navy conducted a study of the surface combatant industrial base several years ago to determine what level of production would be required to keep two viable shipyards in the business of building destroyers and cruisers. The study concluded that a minimum of three DDG-51s per year, with additional workload at Ingalls, would be necessary to achieve that goal. I also believe that the study concluded that, even with "additional work," at a production level of two DDG-51s per year, one of the yards would probably be forced out of business. We have asked the Navy to update that analysis. The Navy has provided a report responding to that request. I believe that each of you have seen the portions of the Navy's report that deal with your own shipyard.

I wanted to give the two of you an opportunity to give the subcommittee your views on the Navy's report.

Are there areas of the Navy's destroyer industrial base study with which you find fault or where your situation is not accurately reflected?

We will understand if there are comments that you may wish to share privately with the subcommittee because they might reveal business sensitive information. If you have concerns of a business sensitive nature, please provide those to the subcommittee privately.

Mr. ST. PÉ. The Navy's Shipbuilding Industrial Base Report accurately reflects the projected conditions at Ingalls Shipbuilding. We have always maintained, and continue to state that the minimum procurement rate for surface combatants is three ships per year, plus some additional work if the government intends to sustain two "building yards" for surface combatants. This building rate permits Ingalls to sustain a minimum core work force with all critical skills, both engineering and production, required to build surface combatants. I believe that it is important for the Nation to sustain two surface combatant shipbuilders, to ensure that the country can purchase required combatants at the most competitive prices, and to sustain the ability to surge the rate of construction when necessary to meet emergent national security requirements. Acquiring a minimum of three surface combatants per year provides one-and-a-half ships per year in production work at Ingalls, a facility that has a surge capacity of up to 10 surface combatants per year.

Mr. WELCH. First, let me confirm—as was noted in the Senator's question, that we were provided only a partial, heavily redacted version of the Navy's recent report to the committee because of the business sensitive nature of the analysis. However, I can tell you that we agree with a number of the findings and conclusions of that Navy report. Those include:

- An average build rate of more than three surface combatants are needed to meet validated Fleet requirements.
- Mobilization requirements exist to preserve the dual-source surface combatant shipbuilding base—the Navy needs BIW and ISI to remain viable and competitive.
- Today's surface combatants require a different level and mix of skills—considerable training and continued daily utilization are required to maintain proficiency.
- Experience and technical maturity of skilled workers and engineers are almost irreplaceable—the ability to reconstitute/rehire would be difficult, costly and time-consuming.
- Both DDG-51 shipbuilders could face a significant threat to continued viability from the procurement profile of two ships per year.
- The current DDG-51 procurement profile will not mitigate the production gap between DDG-51 and DD 21 programs.
- The addition of DDGs to the procurement profile best ensures BIW and ISI remain viable for DD 21 and future programs.

You have asked whether there are areas of the report with which we have concerns. There are. Again, let me remind the committee that we have only had access to a limited version of the report.

A defense press article on the Navy update's to the 1993 Industrial Base Study suggested that due to greater Navy concern over the viability of the follow DDG builder, alternative procurement profiles going forward might involve allocating a higher proportion of future ships to the follow builder. From that press article, it appeared that the reporter had been given access to the entire non-redacted business-sensitive report.

That would represent a significant reversal of the current Navy acquisition policy and approach in the DDG-51 shipbuilding program that has been in place since the fiscal year 2004 ship procurement. Fiscal year 2004 was the first fiscal year when the annual building rate fell to three destroyers. We would take exception to and question the underlying rationale for any such procurement policy change. We would do so for the following reasons:

- The current approach of evenly splitting DDGs between BIW and ISI has proven successful. The Navy has testified that the most recent DDG-51 procurement, the fiscal years 1998–2001 shipbuilding multi-year procurement—currently underway at a buy rate of three ships per year split evenly between BIW and Ingalls—has saved more than a billion dollars, while providing stability to the industrial base at a critical juncture.
- Achieving stability and the preservation of critical surface combatant-unique skills at both DDG-51 shipbuilding yards does not appear served by a potential approach to awarding or allocating future DDGs in a way that provides greater stability to one, but not both, shipbuilders.
- Key assumptions for future workload on which the Navy report and some of its conclusions were apparently based have already changed:
 - The submitted fiscal year 2001 budget forecast seven DDGs would be procured after fiscal year 2001. Recent reports suggest only six DDGs are budgeted after fiscal year 2001.
 - The report assumed that the JCC(X) Joint Command and Control Ship program would start construction in fiscal year 2004. Recent reports suggest the earliest that future program would start is fiscal year 2006. No industry competition to design, let alone build, those ships has yet been held.
 - There remains great uncertainty about the fiscal year 2002 and outyear LPD-17 shipbuilding profile and schedule. Production of BIW's four anticipated ships—only one of which is currently under contract, will occur significantly later than originally planned.

At the current low rate of DDG-51 procurement, the only sound course is to continue to evenly split DDG-51 contracts between BIW and ISI. This course offers the best prospect to sustain the dual-source surface combatant shipbuilding base and the critical skills of both shipyard workforces for meeting future Navy requirements.

In closing, we strongly believe the Navy needs both surface combatant shipbuilders to remain healthy, viable and competitive. The report said so. We agree. Sustaining an annual three-surface combatant build rate through the transition to full rate DD 21 production is essential.

24. Senator LIEBERMAN. Mr. Welch, your prepared statement mentions a Regional Maintenance Partnership, wherein Electric Boat is teamed with the New London Submarine Base and Portsmouth Naval Shipyard. I understand that this arrangement is attempting to share overhead and smooth out workload among the three activities.

Could you describe how this is working?

Mr. WELCH. Across the country, Electric Boat (EB) has approximately 600 people actively supporting Intermediate (I) and Depot (D) level submarine maintenance, a number which is expected to be around 1,000 in fiscal year 2004 when supporting a major depot availability currently planned for private sector accomplishment to smooth the Portsmouth Naval Shipyard workload.

I-Level—Within the Northeast region, EB is providing skilled tradesmen to the Naval Submarine Support Facility (NSSF) for the performance of non-nuclear work under the New England Maintenance Manpower Initiative (NEMMI). EB also manages a team of EB employees and military personnel at the Nuclear Regional Maintenance Department (NRMD) to accomplish nuclear maintenance and repair. Both of these initiatives are at Submarine Base New London, contiguous to EB's Groton facility.

D-Level—Portsmouth Naval Shipyard (PN'S) and EB signed a Resource and Infrastructure Sharing Agreement (RISA) in February 1999 with the goal of improving the efficiency of both activities. The resulting relationship has been very active. With the increased submarine depot maintenance workload, PNS has an ongoing need for EB support. The focus over the past year has been to get out in front of PNS's resource needs so that they can be planned and provided while minimizing the adverse affect to new construction resulting from surprise requirements. The result of this effort is PNS's commitment to continuously employ 66 trade workers with a planned monthly augmentation depending on current availability status and needs. Additionally, EB is providing engineering and planning personnel to assist in shipboard problem resolution and planning documentation development. EB also

routinely supports PNS when performing work at the SUBASE in Groton. On those occasions when EB is unable to provide the needed resources, Newport News is promptly contacted to provide the additional submarine maintenance support.

Over the same period, EB embarked on an initiative to learn to use Navy paper and processes. Evolving from this initiative, EB and PNS have entered into a contract enabling the assignment of work to EB to be performed at the SUBASE or EB's Groton or Quonset Point facilities. The result is that costly travel and per diem expenses are avoided and, by PNS providing material and working paper, redundant costs to re-plan the work in EB's legacy systems are also avoided.

EB recently completed the Selected Restricted Availability (SRA) of U.S.S. *Dallas* (SSN-700), and has started the SRA of U.S.S. *Pittsburgh* (SSN-720). Both of these availabilities are at Submarine Base New London.

In summary, we consider our current maintenance participation to be particularly effective and mutually beneficial to EB and the Navy, as our skilled tradesmen provide an enhanced level of service to the Fleet, and we are able to keep them productively employed and level swings in the new construction workload. We believe that our customers—NAVSEA, the Northeast Regional Maintenance providers, and the ships, squadrons, and type commander—would agree with that assessment.

25. Senator LIEBERMAN. Mr. Fricks, I understand that you have been working on a similar arrangement in the Tidewater area.

Mr. FRICKS. That is correct Senator Lieberman. Under a memorandum of agreement between Newport News Shipbuilding and Norfolk Naval Shipyard, we are both exploring ways in which we can cooperate and share resources in an attempt to bring greater efficiency into the ship repair arena in the Tidewater area.

While this is a relatively new undertaking, we believe it presents an opportunity for the Navy to obtain greater efficiency in its repair activities.

26. Senator LIEBERMAN. Mr. Welch and Mr. Fricks, do any of you have suggestions for other regional cooperation opportunities where we might expand this concept to make operations more efficient?

Mr. WELCH. Stability and predictability in new construction programs was a recurring theme during the testimony provided on the fourth of April. Within the maintenance program, both at the Intermediate (I) and Depot (D) level the same is true. Much of what has been successful in the Northeast has resulted from obtaining firm commitments to assign work and then to effectively plan for its accomplishment. Following are four recommendations for Northeast region submarine maintenance that could be extended to other regions and classes of ships:

- At the earliest possible time, assign work that is in excess of Naval Shipyard capacity to the private sector, e.g., PNS and Groton homeported ships in the case of EB. In the Northeast, current examples would include assignment of the Engineered Overhaul (EOH) of U.S.S. *Providence* (SSN-719) in fiscal year 2004, the Depot Modernization Period (DMP) of U.S.S. *Hartford* (SSN-768) in fiscal year 2006, and nine currently unassigned Selected and Pre-Inactivation Restricted Availabilities (SRA/PIRA) scheduled through fiscal year 2005.
- Continue to level the workloads at Portsmouth NSY and EB by jointly planning utilization of resources. This would reduce overtime premiums, restore surge capability, and help ensure timely return of submarines to the Fleet. By extension, employ a more enterprise-wide (submarine maintenance) approach to workload and resource analysis and assignment, engaging all public and private sector providers.
- Expand EB participation in I-Level work at the Naval Submarine Support Facility (NSSF) and the Nuclear Regional Maintenance Department (NRMD). This would exploit the synergy of experienced shipyard tradesmen working with young sailors at the NSSF, provide flexibility and savings by providing unique infrequently used skills, and leverage existing regional facilities such as the EB graving docks. The opportunity also exists to selectively enhance the engineering and planning capability of NSSF to further leverage the D-level capabilities of the journeymen mechanics being provided under the New England Maintenance Manpower Initiative (NEMMI). This initiative would reduce the cost of separately contracting for what have traditionally been shipyard jobs.
- Utilize the existing EB/NNS agreement to cooperatively develop "Best-Value" solutions to the performance of submarine maintenance. Facilitated by a Navy-initiated consolidated contracting vehicle, this would foster improved communications, enable co-operative planning, optimize resource utilization, and minimize overhead costs and delays.

Mr. FRICKS. I believe there may be other regional cooperation opportunities. For example, in the San Diego Harbor, home today of one and the future home of three nuclear aircraft carriers, Newport News Shipbuilding is serving as an interface between the nuclear qualified employees of Puget Sound Naval Shipyard and the non-nuclear repair companies in the San Diego Harbor for the purpose of performing maintenance on the U.S.S. *Stennis*.

27. Senator LIEBERMAN. Mr. St. Pé and Mr. Welch, the Navy and the two submarine shipbuilders have been using the design build approach to acquire the SSN-774 *Virginia*-class submarine. This has apparently resulted in a much smoother transition into production for this class of submarines than we have been able to achieve in other cases.

The next big combatant class we will be buying is the DD 21.

Are we using all of the lessons that we have learned from the *Virginia*-class experience as we approach the DD 21 program?

Has the Navy identified adequate resources to implement these lessons?

Mr. ST. PÉ. The DD 21 program has not yet entered Phase III during which the detailed design for construction of DD 21 will be developed. The DD 21 will leverage lessons learned from all Navy shipbuilding programs both current and past as well as experience with the commercial cruise ships now under construction at Ingalls. The design build process for the *Virginia*-class submarine program will be thoroughly evaluated for application of successful processes that may be applied to the DD 21 program.

Mr. WELCH. Speaking with respect to the General Dynamics Bath Iron Works led Blue team, I can assure you that we are fully embracing the design build approach for DD 21.

Resources necessary to implement these lessons are identified in the Phase III proposal previously submitted by the Blue Team.

28. Senator LIEBERMAN. Mr. Welch, with modern ships, an increasing share of the cost of warships comes from suppliers other than the shipyard. Therefore, we should be paying close attention to costs from suppliers if we are going to be able to afford fleet recapitalization.

Your prepared statement (on page 8) mentions your approach for reaching out to subvenders in a program called "Extended Enterprise."

Could you describe how this program is working?

Mr. WELCH. The extended enterprise program was initiated in the early 1990's to involve the supplier base at a more detailed level in the low rate production environment. The objectives of the program were three-fold:

- Contain *Virginia* (aka NSSN) material costs
- Minimize material availability risks for *Virginia*
- Maximize the potential value of suppliers to Electric Boat

Each major area of the material supply chain was displayed and analyzed to achieve a robust, affordable network of sources for the life of the program. The strategy employed was based upon full acquisition cost, not just manufacturing cost.

Cross-functional teams consisting of personnel from; Materials Acquisition, Quality Assurance, Design and Construction Engineering, and Operations were utilized in conjunction with supplier representatives to perform the initial and ongoing follow-up reviews. Major tasks consisted of:

- Status Templates
- Work Plan
- Part Family Baseline
- Supplier Baseline
- Lifecycle Cost Framework
- Validate/prioritize/quantify opportunities and risks as they apply to cost and availability
- Conduct Supplier Visits/Surveys
- Establish Performance Targets
- Develop Potential Outcome Scenarios
- Ongoing Follow-up and Re-evaluation to access changes in condition/status

The program is considered to be highly successful, with the following major benefits:

- Despite an environment of consolidation, rationalization and attrition, no major material impacts (i.e. shortages/performance shortfalls) have been experienced by the program.

- Limited/single/sole sources of supply have remained viable, capable businesses which are expected to support the next phase of acquisition.
- Subcontract material costs have been contained close to anticipated levels.
- A stable, technologically sufficient industrial base has been retained for future technology insertion and follow ship development.
- Limited vertical integration has been required by the shipbuilders to cost effectively produce the ship.

29. Senator LIEBERMAN. Mr. Welch, Mr. Fricks, and Mr. St. Pé, all of your statements stressed “stability” as a key attribute of building the fleet for the future. One of the prepared statements mentioned stability in reference to the Navy’s new T-AKE *Lewis and Clark*-class of cargo ship.

I believe that the Navy has historically used the auxiliary vessels in the shipbuilding account as a budget “cushion” to absorb other problems in the shipbuilding account or elsewhere.

Is there some way for industry to demonstrate to the Navy that there is a real cost of this variability, or put another way, a virtue in stability?

Mr. WELCH. It is true that frequently the Navy’s auxiliary ship programs become the “cushion” to absorb problems or opportunities in other shipbuilding programs. Auxiliary programs get deferred or delayed, R&D for such is intermittent, etc.

There is clearly a price paid for the resulting loss of stability for auxiliary ship programs. The key benefits of stability which are compromised are:

- Ability to economically justify specialized facilities investment based on assurances of a certain size production run of ships.
- Stability in workforce. This avoids the very costly hiring—layoff cycle which gets built into the shipyard overhead costs. It enables the company to justify significant investment in personnel training, which greatly aids productivity.
- Employee commitment to the Company.
- Continuous process improvement on regularly scheduled, sequential follow-on ships.

All of these benefits lead to clear (and substantial) productivity improvement which lowers the cost of Naval new buildings. If you remove the stability in the auxiliary ship programs you forego all these cost savings.

The Navy’s current LMSR Sealift Ship program is a classic example of the benefits of program stability.

Eight ships were built in sequence. By taking advantage of this program stability, NASSCO has continuously improved its design and construction processes and the beneficial results to the Navy have been profound. NASSCO’s Sealift ships were delivered to the Navy in the best quality condition of any newly delivered Navy ships. All eight ships have or will deliver well ahead of contract schedule. The Navy has obtained the equivalent of 2 years of an additional ship’s service from these early deliveries. Additionally, these ships were delivered below contract target price with the Navy receiving a refund of a share of this cost saving underrun.

Clearly stability in auxiliary ship programs can and does pay big dividends. The only improvement to this Sealift ship model would have been if all eight ships were authorized up front, in one group buy (instead of the original one firm plus five options, plus a follow-on 7th, then a follow-on 8th ship). Had NASSCO been assured of all eight ships up front, NASSCO would have committed significant capital for productivity enhancing facilities improvements.

Mr. FRICKS. While Newport News Shipbuilding is not involved in building this class of cargo ship and therefore, does not have access to the specific cost figures related to that ship, I believe industry can easily demonstrate that instability in any ship class construction program has a real cost to the Navy.

Mr. ST. PÉ. Litton Ship Systems’ most recent experience with auxiliary ships is the TAO program during which Avondale built 16 ships. This program was quite stable and enjoyed the attendant efficiencies. Avondale was able to sustain a qualified highly skilled work force, negotiate good prices for materials and thus leverage the learning curve advantages not only at the building yard but in the supply chain as well.

QUESTIONS SUBMITTED BY SENATOR MARY L. LANDRIEU

30. Senator LANDRIEU. Mr. Welch, Mr. Fricks, and Mr. St. Pé, when listening to your opening statements and reviewing your written testimony I was struck by a common chord that runs through them all. In a word, that common chord is stabil-

ity. Let me assure you that I am in complete agreement with your assessment and believe this is probably the single item this Congress can address to reduce ship-building costs and ensure the taxpayers get the biggest bang for the buck. We are all aware of the facts concerning current ship purchase rates.

I would like each of you to provide your best estimate for the required ship build rates on major Navy SCN programs to maintain the industrial base *if that rate were guaranteed for the next 5 or 10 years?*

What was your estimate based on?

Mr. WELCH. The question of the required ship building rate to maintain the industrial base has two interlocked answers—the build rate for a specific type of ship such as nuclear or surface combatant required to maintain the unique skills and capabilities associated with that program, and the aggregate build rate across all programs required to maintain not only the first-tier shipbuilders but also the suppliers, service providers, and second-tier yards which are an indispensable part of the equation.

On a programmatic basis, the question is largely what rate will allow the pertinent shipyards to both maintain critical skills and capabilities, and deliver an affordable product, i.e. not burden the procurement price with unsupportable levels of overhead or with major cyclic employment costs. Our assessments are based on the studies of the submarine and surface combatant industrial bases which General Dynamics assisted the Navy in developing:

The minimum sustainable rate of nuclear submarine construction (i.e. the SSN program) is approximately one ship every other year at each of the two yards currently engaged in the *Virginia* program, or a combined minimum rate of procurement of one ship per year. This will sustain necessary capabilities, albeit at something of a cost premium. However, the minimum efficient rate of production, at which cyclic employment and overhead absorption costs cease to be an issue, is approximately two nuclear submarines per year, with one delivery from each yard on an annual basis.

- Because of the almost 6-year construction span for an SSN, and the successive phases of construction each of which requires different capabilities (parts manufacturing/module construction/ship assembly/waterborne tests and trials), effective trade labor, equipment, and facility utilization can be achieved at or near that annual delivery rate.
- The minimum sustainable rate of surface combatant construction (i.e. the DDG-51/DD 21 programs) is approximately three ships per year, split equally between Ingalls and Bath Iron Works. Our estimate is consistent with the Navy's surface combatant industrial base study conducted in 1993 and updated in 2001.
- The minimum sustainable rate of amphibious warfare ship construction (i.e. the LPD-17 program) is approximately two per year, although this number is very much a function of what other work is ongoing at the yards in question. Future programs such as JCC (X) or LSD replacements are counted in this requirement as the follow-on to the LPD-17 program.
- The minimum sustainable rate of auxiliary ship construction (i.e. the T-AKE program) is a function of which yards are dependent on auxiliary ship work to maintain capabilities and keep overhead costs under control. Ideally, NASSCO would like to see two Navy auxiliary ship deliveries per year from its yard. This would consume roughly half of NASSCO's capacity, leaving the other half for commercial work. Any production rate below about one delivery per year at a given yard becomes very inefficient for the sorts of reasons discussed under submarines. If work is assumed split between two yards, for example NASSCO and Avondale, then the minimum sustainable rate is probably about two ships per year.

Based on recent procurement rates and published studies, we assume that the minimum sustainable rate of construction for nuclear aircraft carriers (CVNs) and large-deck amphibious assault ships (LHDs) would be approximately one every 4 or 2 years, respectively. However, the rate for LHDs is probably affected by what other amphibious warfare or major auxiliary ship work is interspersed in the Ingalls workload.

Adding up all of the minimums listed above, and assuming that there is a requisite level of concomitant commercial ship construction at NASSCO, Ingalls, and Avondale to support minimum workforces and facility utilization rates, would indicate that on average at least seven naval vessels need to be procured each year. However, a rate of construction which would not leave the industry hanging on the ropes, and would begin to achieve some level of efficient production, would probably be closer to 10 ships per year.

This volume must now be discussed in the context of profitability. Providing a market rate of return is a function of securing sufficient volume that offers the opportunity to earn a risk-balanced rate of return. In the November 14, 1996 "Navy Shipbuilding Practices Study" KPMG highlighted problems faced by the U.S. shipbuilding industry with respect to financial viability. Of the 43 U.S. Navy contracts analyzed (including DDG's 59–81), at "Contract Inception" fewer than 50 percent implied an internal rate of return exceeding the cost of capital. After "Significant Progress" the number drops to only 12 percent. These are clearly not outcomes that would be viewed favorably by owners or shareholders, and are not consistent with maintenance of the industrial base.

In addressing these problems, consideration must be given to the procurement approach used to let these contracts, the financial terms and conditions of the contracts themselves, and expectations for the competitive landscape of the future.

Mr. FRICKS. I can only comment on the build rate for nuclear aircraft carriers and submarines, the two programs with which Newport News Shipbuilding is involved.

As I said in my formal testimony, the industrial base is presently surviving but struggling with the present ship procurement rate. However, to bring more efficiencies and to strengthen the shipbuilding industrial base the *Virginia*-class submarine program should have multi-year procurement authorized at a rate of not less than two per year, beginning not later than fiscal year 2004. Additionally, in order to maintain a Navy with 12 carrier battle groups, nuclear aircraft carriers should be procured at a rate of one, not less than every 4 years. Additional savings and efficiencies could be obtained with a single contract award for two or three nuclear aircraft carriers to be built over the next 8 to 12 years, as was done in 1981 and again in 1988.

These estimates are based on numerous studies conducted by Newport News Shipbuilding and the Navy regarding the most efficient ways to procure the number of nuclear aircraft carriers and submarines required by the Navy.

Mr. ST. PÉ. The minimum production to ensure a stable, multi-skilled production work force which allows an improving learning curve.

A minimum stable shipbuilding rate for each of the Navy shipbuilding programs in which Northrop Grumman's two shipyards are currently involved or in which the company expects to be are as follows:

DDG-51 and DD 21—The Navy needs to procure a minimum of three surface combatants destroyers or cruisers per year. With two combatant building yards this will ensure each yard a stable minimum building rate 1.5 ships per year. A most economical and therefore most cost efficient building rate for the Navy is a procurement rate of five combatant ships per year or 2.5 ships per year for each of the two building yards.

Large Deck Amphibious ships (LHD/LHA)—A minimum procurement rate of one ship every 3 years if these ships are to be built in a single shipyard.

LPD-17—A minimum procurement rate of two ships per year assuming two shipyards are participating in the production.

T-AKE—A minimum procurement rate of one ship per year assuming a single shipyard is producing the ships.

Coast Guard Cutters (Deepwater Program)—A minimum building rate of one ship per year per building yard.

31. Senator LANDRIEU. Mr. Fricks, in your opening statement you refer to the impact of various ship funding alternatives including multi-year funding, advance procurement, block buys and advance appropriations. I must confess that I agree with you completely and was quite surprised when I discovered that the U.S. Government does not treat the acquisition of warships costing literally hundreds of millions of dollars in the same way a business finances its capital programs. That is, on a cash outlay basis.

Recognizing that stability truly is the key to cost savings, which of these acquisition reforms would be most effective in cutting the government's acquisition and life-cycle costs?

What pros and cons do you see to the various approaches I mentioned above?

Mr. FRICKS. These various alternatives, such as multi-year funding, advance procurement, block buys, and advance appropriations, all support the first fundamental of a successful shipbuilding program—a commitment to stability. Therefore, I enthusiastically support them.

What these alternatives do to varying degrees is allow the shipbuilder to plan ahead, invest ahead and buy several ship-sets of material at once—all of which help to reduce the costs of the ships.

Advance appropriations are more in line with how business finances its capital programs, which is on a cash outlay basis. For example, if we build a new dry dock,

we will approve the entire project but budget the cost over the future years when it is expended. It is certainly worthy of careful consideration. Using advance appropriations, shipbuilders can build more ships over the next 5 or 6 years and certainly build them at reduced costs.

There is no question that the use of multi-year procurement of ships provides the most effective approach in cutting acquisition costs. If multi-year procurement were coupled with advance appropriations, there would be a real opportunity for the Government to obtain the ships it needs in the most cost effective manner. However, let me emphasize once again, that a long term commitment to a stable and increased production rate of all classes of Navy ships is essential if these alternative funding approaches are to reap their potential.

32. Senator LANDRIEU. Mr. St. Pé, in your opening statement you made reference to the teaming concept between Avondale and the Navy in designing and building the LPD-17. Combined with such innovative practices as the Integrated Product Model and work sharing between the Ingalls and Avondale yards, we are beginning to see the fruits of that innovation in terms of reduced life-cycle costs for the ship.

Please share with us your thoughts on the effectiveness of this teaming concept and what barriers, if any, are preventing us from achieving the maximum cost savings and efficiencies from process?

What is the status of the LPD-17 program and what is your assessment as to Litton's ability to maintain the construction schedule?

Do you see any potential for additional cost savings through either advance procurement or multi-year buys of additional LPD-17 hulls?

Do you believe any of the technology and capital investments made for the LPD-17 program can be leveraged to produce cost savings in the Joint Command and Control Ship (JCC) program?

Mr. St. Pé. The teaming process for LPD-17 includes many elements, which should be used in future programs. There have, however, been a number of barriers to achieving full cost saving, including FAR and CAS regulations that restricted the combined Government Alliance Team's ability to define the Government's role on the team. The Government was allowed to participate in Team meetings, but was restricted from participating in decision making or any action where they could assume liability. The government chose to work around this limitation by influencing program direction and team decision making through the Award Fee process. The anticipated benefit of onsite Government/Alliance decision making was not realized as planned for in the Alliances bid proposal.

Developing a new design tool, and training people to use this new tool on a non-concurrent basis, added time to the planned schedule. This added unplanned for time to the design schedule. Similarly, the IPDE schedule was rigidly adhered to (required to be fully operational within 18 months of contract award) despite the lack of user input until the training was complete. Finally, the Government mandated a focused effort to gather significant Fleet input to the design during the first year of the program. This effort was out of scope (unplanned effort) for the Alliance. This Fleet input drove implied requirements, which the onsite government team members imposed into the design acceptance criteria.

I assess Litton's ability to maintain the revised LPD-17 program schedule as excellent. We have now completed over 85 percent of the detailed design and started construction on the first ship. Early production returns are excellent, meaning we have very little production rework. That is reflective of an excellent design and our production personnel's understanding of the production documentation.

Additional advance procurement funding will permit us to purchase long lead material using the in place very attractively priced options with our suppliers. Lack of advance procurement funding would force us to allow these options to expire thus necessitating the re-negotiation of prices for key long lead items. Multi-year procurement is very attractive for programs such as LPD-17 where the Navy procures multiple ships over an extended production run. The DDG-51 Aegis Destroyer program is an excellent example of the savings that can be achieved with multi-year procurement.

I am confident that the technology and cost savings from the LPD-17 program can be leveraged for the Navy's planned Joint Command and Control ship (JCC) program. The degree to which this can be done will ultimately depend on the Navy's requirements for JCC. Certainly, leveraging the fully digital computer aided design of LPD-17 to modify it for.

JCC requirements could potentially save millions of dollars in the acquisition of these ships. Additionally, if the program were to run concurrent with or immediately follow completion of LPD-17 production there would be an opportunity to take advantage of the hot production line and learning curve. This is true not only

at the building yards but at key suppliers for components used in both classes of ships.

33. Senator LANDRIEU. Mr. St. Pé and Mr. Welch, there is currently a more-than-academic debate in Naval circles about the efficacy of the "Streetfighter" concept advocated by Vice Admiral Cebrowski and the Naval War College.

What is your assessment of the Streetfighter concept?

Have your organizations done any research or preliminary work and estimates on this concept? If so, what is your assessment and what costs do you envision would be required to build several prototypes?

Mr. ST. PÉ. Streetfighter is an interesting concept, but at this stage only a concept. As shipbuilders we don't attempt to define the Navy's mission or forces needed to accomplish it. We do try to understand the Navy's mission requirements in order to assist in defining what ships can most efficiently meet mission needs. I think the shipbuilding industry needs to understand more about what missions the Navy envisions for Streetfighter. How will it operate, what support concept does the Navy project? We have done some preliminary study of Streetfighter concepts, but it is difficult to estimate costs for prototype or production ships without a clearer understanding of what these ships would be expected to do. We have researched various hull forms, construction techniques and materials. Knowing some details, we can assist the Navy in exploring various solutions to meet the mission needs.

Mr. WELCH. Streetfighter has been discussed by the Navy as a concept for the future (post DD 21), but very little in the way of specific requirements is available to comment on. Our focus has been on the stated war fighting requirements of the DDG-51 Flight IIA changes, and for the last 3 years, the DD 21 program.

General Dynamics has not to date, been formally solicited by the Navy to participate in development of the conceptual approach, and therefore has not invested in preliminary work related to this concept.

34. Senator LANDRIEU. Mr. Welch, Mr. Fricks, and Mr. St. Pé, S. 127 is currently pending before the Senate. It mandates that repair work on all vessels covered by the bill be performed in U.S. shipyards.

I would like all of you to comment on S. 127 and how you believe it would affect your yards and what, if any, impact would it have on Navy ship construction and repair.

Mr. WELCH. We oppose S. 127 because it would be extremely detrimental to the U.S. shipbuilding industrial base. U.S. shipyards are building cruise ships again for the first time in over 40 years. Each ship represents over \$400 million in direct revenue to the shipyard and thousands of jobs. Beyond these direct impacts, millions of dollars are being spent through U.S. subcontractors. S. 127 would kill this market, and retain only the comparatively insignificant market to repair cruise ships. Commercial shipbuilding is critical to maintaining U.S. shipyards especially in these periods of very low Navy shipbuilding.

If commercial work is being done in a shipyard which also builds Navy ships, the overhead of the yard can be spread over a larger base of work thereby lowering the cost of Navy shipbuilding. The Jones Act and the Passenger Vessel Services Act, through the U.S. build requirement, provide the commercial shipbuilding market for U.S. shipyards, both large and small. S. 127 is no help to U.S. shipbuilding, and would drive up the cost of Navy shipbuilding.

Mr. FRICKS. Senator Landrieu, while Newport News Shipbuilding is not involved in any commercial ship construction, we believe that S. 127 would be harmful to the Navy shipbuilding industrial base. The ship repair provisions in S. 127 would have very little impact in our yards. But, other provisions of S. 127, amending the U.S. build provisions of the Passenger Vessel Services Act to allow unlimited numbers of foreign built ships into the U.S. domestic coastwise trade, would have substantial adverse impact on those shipyards now building ocean going cruise ships and could adversely impact Navy ship construction programs at those yards.

Mr. ST. PÉ. There is no need for a change to the Passenger Vessel Services Act. Large oceangoing cruise ships are once again being built in this country to serve the growing American market. Currently, two ships are under construction at Northrop Grumman Ingalls Shipbuilding (the first ship is more than 20 percent complete), with contract options for four more ships. Furthermore, smaller coastal cruise ships are being built in the U.S. to also serve American ports.

S. 127 will amend the U.S.-build provisions of the Passenger Vessel Services Act allowing unlimited numbers of foreign built ships into the U.S. domestic coastwise trade—effectively giving away the American shipbuilding industry to foreign shipbuilders. The bill will jeopardize the construction of ships currently covered by contract options and ongoing contract negotiations, by interjecting tremendous uncer-

tainty into the market that would discourage efforts to develop an American cruise ship industry to serve American ports. Under this proposed legislation, American companies would not be able to secure financing for American-built ships.

With the low level of naval ship construction in the last decade, averaging just six ships a year, commercial ship orders have been critical to sustaining the 9,080 companies, employing 879,014 highly skilled Americans, in 47 states that make up the defense shipbuilding industrial base. Commercial ship construction has also reduced the cost of naval ships by allowing shipyards to spread their overhead cost across more ships. Without commercial ship construction the cost for naval ships will increase, and the defense shipbuilding industrial base will constrict, resulting in job losses to America's manufacturing base.

We oppose S. 127 for these and other deficiencies. S. 127 will harm the American defense shipbuilding industrial base, weaken American national security, put shipbuilders out of work, jeopardize the economic viability of existing American cruise ship operating companies, and stop the construction of an all American cruise ship industry to serve American citizens and American ports.

[Whereupon, at 11:10 a.m., the subcommittee adjourned.]

**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2002**

THURSDAY, APRIL 26, 2001

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

**STRATEGIC AIRLIFT AND SEALIFT IMPERATIVES FOR
THE 21ST CENTURY**

The subcommittee met, pursuant to notice, at 2:01 p.m., room SR-232A, Russell Senate Office Building, Senator Jeff Sessions (chairman of the subcommittee) presiding.

Committee members present: Senators Smith, Sessions, Collins, Kennedy, and Carnahan.

Professional staff members present: John R. Barnes, Gary M. Hall, and Thomas L. MacKenzie.

Minority staff members present: Creighton Greene, professional staff member; and Michael J. McCord, professional staff member.

Staff assistants present: Kristi M. Freddo and Jennifer L. Naccari.

Committee members' assistants present: Arch Galloway II, assistant to Senator Sessions; Kristine Fauser, assistant to Senator Collins; Derek Maurer, assistant to Senator Bunning; Menda S. Fife, assistant to Senator Kennedy; and Neal Orringer, assistant to Senator Carnahan.

**OPENING STATEMENT OF SENATOR JEFF SESSIONS,
CHAIRMAN**

Senator SESSIONS. Good afternoon. I think it is time for us to commence our hearing and we appreciate General Robertson joining us and I thank our ranking member, Senator Kennedy, for his insight and for his participation on this subcommittee.

The Seapower Subcommittee today will convene to review strategic airlift and sealift for the 21st century. The subcommittee has oversight and responsibility for three enablers of our strategic lift. One, the C-17, the C-5, and the C-141 aircraft and agreements with the U.S. airline industry.

Two, the active duty; preposition and Ready Reserve Force, strategic lift ships and agreements with U.S. maritime industry.

Three, the Military Traffic Management Command and agreements with the U.S. national transportation industry.

I had about 10 years in the Army Reserve as part of a transportation unit. They work with the Military Traffic Management Command. There is great appreciation of the massive challenges they face when you talk about rapidly moving large amounts of cargo around the world.

Of course, we all recognize that our Active Duty Reserve and civilian men and women are the key enablers which make the Defense Transportation System operate, and that specific personnel-related issue will be addressed by the Personnel Subcommittee. The highest strategic lift importance, no matter what the mission, whether at home or abroad, is this country's Defense Transportation System (DTS) which enables us to quickly extend a hand of friendship or the fist of war around the globe.

Congress has aggressively exercised its oversight responsibility in assessing the requirements for strategic lift and then taking action. This oversight has resulted in legislation which focuses attention on strategic lift as a key enabler for carrying out the full range of military operations.

To this end, Congress set up the National Defense Sealift Fund and enacted legislation which provides incentives for commercial ships and aircraft to install national defense features and to transport military personnel and equipment in crisis. The Mobility Requirement Study 2005 (MRS-05) examined the requirements for the Defense Transportation System to support two nearly simultaneous major theater wars. The study was forwarded to Congress in January of this year. In summary, the study concludes that the current plan to recapitalize strategic sealift, including prepositioned ships, will be sufficient to meet the 2005 requirements if the containerization, equipment, and commercial agreements are successful.

The study also concludes that there appears to be a requirement for more C-17 aircraft, more than the 120 presently planned for procurement. While it is correct that the funding for the infrastructure, personnel, and systems are funded in the services' budget, we hope that today's witness will provide his unique insight into the requirements and programs needed to manage the strategic lift portion of the Defense Transportation System. Specifically, we hope to review and explore the following questions concerning strategic airlift and sealift.

One, what are the budget and policy impacts of the Mobility Requirement Study 2005?

Two, will additional C-17 aircraft be required, or will the present inventory objective of 120 suffice?

Three, what modifications are required to bring 126 C-5 aircraft to their required operational readiness?

Four, what is the risk associated with having a one Major Theatre War (MTW) strategic lift capability and a two-MTW national security strategy?

Five, is the Joint Logistics Over-the-Shore (JLOTS) capability adequate to offload strategic ships that arrive where a fixed port or facility is not available, and what are the strategic lift implications of the current Army transformation strategy?

To answer these questions and others submitted by the members, we welcome the Commander in Chief of the U.S. Transportation Command (USTRANSCOM), Gen. Charles T. Robertson, Jr., USAF.

General, we welcome you and thank you for your 33 years of service in the United States Air Force. Before we begin your testimony, I would like to recognize Senator Kennedy, our ranking member, for any comments he may have.

STATEMENT OF SENATOR EDWARD M. KENNEDY

Senator KENNEDY. Thank you. Thank you very much, Mr. Chairman. Thank you for calling this hearing today and our previous hearings as well. I want to join you in welcoming General Robertson to the Seapower Subcommittee today. The subject of strategic lift is not a new one for the subcommittee. We have taken significant action over the years in dealing with strategic lift issues on a bipartisan basis. This subcommittee played a significant role in establishing the U.S. Transportation Command. We encouraged the Department of Defense to focus on strategic sealift issues and urged the Department to undertake the original mobility requirement study. We authorized the needed resources for the strategic sealift shipping and we, Senator Cohen and myself, helped to restructure the C-17 program as a result of controversies that surround it.

We supported the Maritime Prepositioning Force (MPF) enhancement program to provide an additional ship for each MPF squadron. Today's hearing continues the subcommittee's strong bipartisan interest in the broader strategic lift policy issues facing the Nation today. We all understand that Secretary Rumsfeld has conducted a review of defense needs. We look forward to its results. Possible major changes for the future include altering the current approach and size in forces which is based on handling two simultaneous MTWs. It seems unlikely, however, that Secretary Rumsfeld's review will lead to major reductions in strategic lift requirements, since the current lift structure is already based on supporting one MTW.

Protecting our national security will undoubtedly require a significant continuing emphasis on force mobility, including basic requirements for strategic lift. We look forward to working closely with the administration in meeting these requirements.

Thank you, Mr. Chairman, for calling the hearing and maintaining the subcommittee's interest in these very important issues. I look forward to hearing General Robertson.

Senator SESSIONS. Thank you, Senator Kennedy. It appears there have been actions as a result of this subcommittee that have been beneficial. We salute you for those efforts. General Robertson, we will be glad to hear from you.

STATEMENT OF GEN. CHARLES T. ROBERTSON, JR., USAF, COMMANDER IN CHIEF, UNITED STATES TRANSPORTATION COMMAND

General ROBERTSON. Thank you, sir. Mr. Chairman, Senator Kennedy, I really do appreciate this opportunity to come back again before the Seapower Subcommittee of the Senate Armed Services Committee to talk to you about U.S. Transportation Com-

mand (USTRANSCOM) and the Defense Transportation System (DTS). It's probably the second most important thing in my life, and my wife will occasionally even argue that point.

I submitted a formal statement to the subcommittee. I would ask that it be taken for the record. It is very long. I doubt that anyone in this room except one who reminded me in the back that he had read it word-for-word will go through it point-by-point and word-for-word. It is my "Statement of the Command" message to the subcommittee, and so I won't hold it against you if you do not read it. If you will allow me just a minute to give you some of the high points.

Senator SESSIONS. Well, it will be made a part of the record and it will be reviewed by us. Thank you, very much.

General ROBERTSON. Thank you, Senator. Just a couple of points. First, I would say, as I will probably respond to many of the questions that are offered this afternoon, that as we discuss the U.S. Transportation Command and Defense Transportation System that it is a classic good news/bad news story. The first good news is that there is more good news than there is bad news. More good news than there was last year, and if you call me back again next year, there will be more good news next year, just based on the direction that we have taken and the support of this subcommittee.

Let me tell you just a minute about who we are, who I think we are, and what we do.

USTRANSCOM is 150,000 dedicated Department of Defense transportation specialists. They are our U.S. airlines. They are our U.S. air cargo carriers. They are the U.S.-flag fleet. They are our trucking and rail partners. They are our merchant mariners around the world, both licensed and unlicensed, who operate our ships and the air crews that operate our airplanes around the world. We are a Total Force, Active Duty, Air National Guard, Air Force Reserve, DOD civilian, and commercial partners who shoulder the load of the Defense Transportation System.

It is not an attractive business and that is one of the major reasons I appreciate this subcommittee's attention to lift, because it is not glamorous. We do not drop bombs. It is just that no bombs get dropped until we act first. Nothing happens until something moves.

At the personal level, we are the C-5 and the C-17 air crews you see delivering relief supplies around the world. We are your licensed and unlicensed merchant mariners, we are the commercial truck drivers and locomotive engineers and airline crews who move our economy every day. But even more, we are your John Q. Citizen, the person who puts aside his civilian job and his civilian suit on the weekends or frequently on his holiday vacation—to come out and serve our country as a member of the Reserve or the Guard. In fact, the 89th Airlift Wing at Andrews that you fly with on a regular basis, is a part of the Defense Transportation System. Finally, we are the trucks that move the household goods and the ships that move the POVs of our members as they go from station to station as a part of the Defense Transportation System.

What do we do? We characterize our role in three ways: to get the troops to the fight; to sustain the troops at the fight while they are there; and to bring them home when the fight is over. Now, you have to define "fight" very liberally because, out of what we do, we

are the airplanes that you see delivering the troops to and from Kosovo and to and from Southwest Asia, to and from Bosnia, and to and from Korea. We are the airplanes and ships that you see delivering relief supplies after the floods in Venezuela or Mozambique, after the earthquakes in India, and the earthquakes in Turkey and the earthquakes in Taiwan. We are the aircraft that air drop relief supplies to Antarctica in the middle of winter. We are the aircraft that repatriate the crews from the bombing of the U.S.S. *Cole* and from the recent China EP-3 incident. We are the aircraft and we are the ships that you see in the background delivering the men and the women and the supplies to the far off reaches of the globe and bringing them home again; and those ships and airplanes belong to the United States Transportation Command and its components.

I hope you will ask about our readiness. I hope you will ask about our modernization programs, about our infrastructure challenges, and about our people. In every area, my answer to you will be that we are okay. That is a well chosen word. We are okay. The good news is that we are better in most every area than we were the last time I testified before this subcommittee. The better news is that in several of those areas, we are going to be even better in the months and years ahead. However, the bad news is in a few cases, we do have some concerns about the future.

Senator Sessions, Senator Kennedy, rather than preempt your questions with any more dialogue, I will leave it at that and I look forward to your questions.

[The prepared statement of General Robertson follows:]

PREPARED STATEMENT BY GEN. CHARLES T. ROBERTSON, JR., USAF

TODAY'S UNITED STATES TRANSPORTATION COMMAND (USTRANSCOM)

Today, America and the international community depend on the U.S. military to perform a wide range of warfighting, peacekeeping, and humanitarian missions. No matter what the mission, whether at home or abroad, this country's Defense Transportation System (DTS) enables it to quickly extend a "hand of friendship" or "the fist of war" to any location on the globe. The DTS, with its people, trucks, trains, aircraft, ships, information systems, and infrastructure, provides the United States the most responsive strategic mobility capability the world has ever seen. It is USTRANSCOM's responsibility to manage this strategic global mobility system.

USTRANSCOM takes a holistic approach to managing the DTS, i.e., strategic transportation planning and modal operations are interdependently managed. When the unified commands, services, or other government agencies require strategic transportation they need to make only one call: to USTRANSCOM.

Because of USTRANSCOM's responsiveness and global reach, the command is in a constant state of activity. At every moment of every day, around the globe, USTRANSCOM's superb force of soldiers, sailors, airmen, marines, coast guardsmen, and civilians is accomplishing a wide array of joint mobility missions. For example, during an average week USTRANSCOM operates 1,669 strategic air mobility missions transiting 52 countries, operates 22 military ocean ports in 13 countries, and has 20 chartered military ships underway. Thirty-six additional government-owned and chartered vessels, loaded with military cargo, are strategically prepositioned around the world, significantly increasing the responsiveness of urgently needed U.S. military equipment and supplies during time of crisis. USTRANSCOM does all of this as a total-force team of Active Duty, Guard and Reserve personnel, civilians, and commercial partners, bringing the total synergy of U.S. military and commercial transportation resources to bear in times of crisis, wherever in the world they may be required.

The capability of America's DTS is unparalleled in history. Never before has such a ready and capable mobility system existed in peacetime. But "readiness" and "peacetime" are often ambiguous terms when used to describe today's world environment. USTRANSCOM frequently finds itself operating at a near wartime tempo

during peacetime. We are frequently called upon to surge to a combat operations tempo without benefit of our full wartime manning or activation of our agreements with industry for their surge capacities.

That said, even though USTRANSCOM is generally ready and capable, there are a number of challenges in USTRANSCOM's critical personnel, infrastructure, and equipment underpinnings that concern me now and, of even greater concern, challenges that could impair command capabilities in the future if we do not set about to correct them soon.

As you look at USTRANSCOM today, many of the visible features of the DTS are showcased daily around the world: the ships, aircraft, trains, and people who make day-to-day global mobility for the Department of Defense (and others) a reality. That said, many people are not aware of the wide variety of aggressive actions USTRANSCOM is taking behind the scenes to improve our transportation reliability and our global responsiveness to America's challenges. This statement serves as a "State of the Command" report and examines where we are, where we are going, how we are getting there, and the challenges we face. Ultimately, this statement is intended to portray the USTRANSCOM you see and know . . . as well as, the USTRANSCOM you may not see everyday.

THE MISSION

USTRANSCOM's mission is to provide air, land, and sea transportation for the Department of Defense (DOD), both in time of peace and time of war. To accomplish this mission, for day-to-day execution, we rely on USTRANSCOM's Component Commands: the Air Force's Air Mobility Command (AMC); the Navy's Military Sealift Command (MSC); and the Army's Military Traffic Management Command (MTMC). Relying on a blend of active and Reserve Forces, civilian employees, and commercial industry, the USTRANSCOM component commands provide mobility forces and assets in a force structure continuum designed to be able to make a seamless transition from peace to war.

USTRANSCOM is a leader in DOD's reengineering efforts. As the first Secretary of Defense-designated "Reinvention Commander in Chief (CINC)," with authority to emulate leading edge business practices, USTRANSCOM is actively engaged in finding commercial best business opportunities and implementing those efficiencies for DOD. The command has pioneered DOD's efforts to leverage the strengths of U.S. commercial industry to significantly improve the daily service of the DTS to all customers, contributing significantly to our ability to guarantee wartime readiness. The command has also formed a supply-chain management partnership with the Defense Logistics Agency (DLA), creating a new Strategic Distribution Management Initiative (SDMI) that promises to streamline DOD's entire distribution system.

While we are proud of the significant gains made in peacetime efficiency, we remain focused on our primary imperative: wartime readiness. Simply put, the USTRANSCOM wartime mission has three objectives:

1. Get the warfighter to the fight.
2. Sustain the warfighter during the fight.
3. Bring the warfighter home after the fight is done.

Accordingly, my number one mission at USTRANSCOM is strategic mobility support to the regional CINCs during crises. That said, as our Nation's policy and decision makers ponder changes to our National Security Strategy, they should always keep in mind that *USTRANSCOM is only postured—from a force structure perspective—as a one Major Theater War (MTW) force with a two MTW mission* and that the command is still evolving to meet even that requirement.

Today, it is our assessment that we can meet the requirements of the first MTW with moderate risk, but that there are higher levels of risk associated with the second nearly simultaneous MTW. In fact, if the National Military Strategy were to evolve from the current two nearly simultaneous MTWs to something considered less stressful—one MTW and one or more Smaller Scale Contingencies for example, assuming no improvement to our current or projected posture, we would continue to operate at an elevated risk. The June 2000 Government Accounting Office (GAO) report titled, "Military Readiness: Air Transport Capability Falls Short of Requirements" (Code 702017) (Final Report NSIAD-00-135), highlighted the depth of the problem. This report stated, "DOD does not have sufficient airlift and air refueling capability to meet the two major theater war requirements because many aircraft needed to carry out wartime activities are not mission ready." The GAO estimated that DOD is 29 percent short of being able to meet the established military airlift requirement and nearly 19 percent short of being able to meet the established air refueling requirement.

USTRANSCOM's approach to posturing (and improving) itself to be able to meet DOD's transportation mission today and tomorrow requires flexibility and initiative, and is guided by the following four basic themes:

- Theme one: Maintaining *readiness* to perform our global mobility mission.
- Theme two: Continuing *modernization* and upgrade of aging equipment and infrastructure.
- Theme three: Improving key *processes* in the DTS.
- Theme four: Investing in the care and quality of USTRANSCOM's most valuable resource—its *people*.

THEME ONE: READINESS

Regardless of the above, no matter what U.S. forces are called upon to do around the world, the American fighting machine cannot meet its two critical warfighting capabilities labeled “dominant maneuver” and “focused logistics” without USTRANSCOM forces in the vanguard. Recent exercises and operations demonstrate the day-to-day peacetime readiness and capability of the DTS. That said, the growing impact on our day-to-day peacetime airlift operation resulting from the continuing challenges associated with the low reliability rate of our aging C-5 fleet, coupled with continuing reductions in overall strategic airlift flexibility as a result of the “one-plane-for-two” swap of C-17s for retiring C-141s, adds fuel to a growing list of additional concerns (not the least of which our assessment that our “second of two MTWs” capability is high risk), and is a challenge begging a solution.

Recent Operations

USTRANSCOM's daily Global CINC-support mission, coupled with DOD's Joint exercise program, gives USTRANSCOM the opportunity to plan and execute regularly with the regional CINCs and their Service component commands and staffs. Additionally, it gives the command an opportunity to exercise surge shipping, prepositioned afloat stocks, military air and sea ports, air mobility crews and staffs, Reserve component forces, and the staff at USTRANSCOM. Last year, USTRANSCOM participated in 117 Joint exercises worldwide. These exercises not only allow us to revalidate current capabilities, they also allow us to test new capabilities, as well as to improve the processes we use to move bulk DOD cargo within the worldwide transportation network.

USTRANSCOM is a “high tempo” command. In fact, the command's operational pace during peacetime—especially that of our Air component—has increased dramatically since Operations Desert Shield and Desert Storm. As an example, let me describe USTRANSCOM's contributions to our most noteworthy mission since I last testified before this subcommittee . . . that being our support of combat operations in the former Yugoslavia. Beginning in February 1999, AMC tanker and airlift aircraft began our support to the Air War over Serbia and subsequent operations by leading the deployment of combat and combat support aircraft to Europe in support of an increasing military capability available to the North Atlantic Treaty Organization (NATO) in the theater. In March of that same year, Operation ALLIED FORCE began in earnest, with an air campaign that lasted 78 days . . . a campaign which ultimately required USTRANSCOM and its Component Commands to split their capabilities three ways to simultaneously support the three distinct mobility missions which emerged through the multiple phases of ALLIED FORCE.

For example, at the commencement of ALLIED FORCE, USTRANSCOM's first mission was in support of the United States European Command (USEUCOM) and NATO strategic deployment of combat and combat support aircraft to European bases. In this phase, AMC air refueling aircraft established an air bridge across the Atlantic to deploy combat, combat support, and airlift aircraft . . . with our airlift deploying accompanying support personnel and equipment. Additionally, AMC deployed an MTW-sized air refueling force . . . augmented by forces generated through a Presidential Reserve Call-up of Guard and Reserve Forces . . . to bases in Europe to support theater air operations. MSC and MTMC simultaneously began deploying ammunition from the US, through European ports, onward to NATO airbases.

As the air campaign intensified, two new missions evolved requiring substantial USTRANSCOM support. The first occurred when refugees streamed across Kosovo's borders into Albania and Macedonia. AMC supported NATO's relief efforts with military and commercial contract airlift missions to provide emergency assistance to refugees. The second additional mission was deployment of Task Force Hawk from the continental United States (CONUS) and Central European Bases into Albania. All USTRANSCOM components supported this effort with AMC providing

airlift and air refueling support, MTMC operating seaports in Italy and Albania, and MSC providing sealift.

It was during this phase that the C-17 became the “workhorse” airlifter of the campaign by operating as both an intertheater and intratheater airlifter, flying 430 missions into Albania. The aircraft performed superbly and offered the combatant commander a new capability with its large capacity and ability to land and operate at very short, austere airfields. Finally, as the air campaign ended, USTRANSCOM supported Operation JOINT GUARDIAN, the deployment of NATO peacekeeping forces into Kosovo by air, land, and sea.

Support to ALLIED FORCE was a total force effort by USTRANSCOM. AMC tanker aircraft, placed under the operational control of USEUCOM, performed nearly 7,000 air refueling missions, greatly extending the range and “on-station time” of U.S. and allied combat and combat support aircraft. An additional 654 strategic air refueling missions were performed in support of the various deployments. AMC also flew 1,108 strategic airlift missions and contracted for an additional 66 commercial airlift missions in support of ALLIED FORCE.

Simultaneously, MTMC operated at two U.S. seaports and eight European seaports in support of the deployment and onward movement of unit equipment, supplies, and ammunition. As NATO air strikes began against Serbia, MTMC began transshipment operations at seaports closest to the strike area. The cargo was transported in vessels managed and directed by MTMC in support of Task Force Eagle and Task Force Shining Hope, the military and humanitarian programs to aid Kosovar refugees.

The first big evidence of this support came in the form of the SS Osprey, which arrived May 2 in Durres, Albania. The Osprey’s arrival signaled a critical surface transportation benchmark in the fielding and supply of American forces in Albania.

The Osprey, a MSC charter, carried 60 vehicles, or 11,000-square feet of Air Force cargo. It was loaded by MTMC’s 839th Transportation Battalion, Livorno, Italy and unloaded in Durres by MTMC’s 840th Transportation Battalion, Izmir, Turkey. Unloading of the Osprey took place without incident. Within a week, MTMC initiated regular ferry operations from Brindisi, Italy, to Durres. For example, some 35,000-square feet of equipment and supplies were moved into Albania between May 7th and 11th. After arriving at Brindisi by rail from Germany, the freight was loaded aboard an Adriatic Sea ferry—chartered by MSC—and shuttled northeast by east, from Brindisi to Durres, in four ferry runs.

A critical shift in surface transportation support took place with the cessation of hostilities, as MTMC shifted gears and began to focus on the movement of the Army task force assigned to perform peacekeeping duties in Kosovo.

In the initial entry, MTMC delivered three shiploads of combat equipment from the 1st Infantry Division via Thessaloniki, Greece, on the northern Aegean Sea. The ship cargoes included hundreds of combat vehicles and scores of shipping containers with equipment to support the 7,000 soldiers of Operation Joint Guardian.

Strategic sealift also played a key role in supporting the combat forces involved in Kosovo operations. MSC supported ALLIED FORCE with 34 strategic sealift ships to include three prepositioning ships. Additionally, MSC tankers carried most of the fuel products used in support of the operation, totaling more than 300 million gallons. MSC supported 29 strategic lift movements, including movement of U.S. Army combat forces from Bremerhaven, Germany to Thessaloniki, Greece. Sealift carried over 1.2 million sq. ft. of vehicles and equipment; 245,280 sq. ft. of ammunition; plus equipment and supplies to assist the more than 400,000 ethnic Albanian Kosovo refugees.

Following ALLIED FORCE, USTRANSCOM supported a fairly steady series of special “headline” missions and humanitarian deployments around the world. For example, AMC airlifted two Federal Bureau of Investigation (FBI) teams to Kosovo in July and August of 1999 to assist in investigations of war crimes. In July 1999, an AMC C-141B aircraft, supported by two air refueling tankers, airdropped medical supplies over Antarctica to aid an ill American doctor. On 16 October 1999, an AMC New York Air National Guard (ANG) ski-equipped LC-130 airlifted this same physician from Amundsen-Scott South Pole Research Station to McMurdo Naval Air Station on Antarctica’s northern coast. Only Air Force airlift aircraft and aircrews had the capability to do this challenging and lengthy mission during the bitterly cold Antarctic winter.

A world away, USTRANSCOM continued its support of those in need following a massive August 1999 earthquake in Turkey. To aid Turkish recovery efforts, an AMC C-5 deployed 70 members of the Fairfax County Virginia Search and Rescue Team to Istanbul on a nonstop flight sustained by two air refuelings. All in all, AMC completed 20 airlift missions in support of Turkish relief efforts. A subsequent Turkish earthquake in November of 1999 claimed over 400 lives and injured over 3,000.

AMC and USTRANSCOM relief efforts for this earthquake mirrored the earlier efforts.

In September 1999, USTRANSCOM responded to another earthquake, this time in Taiwan. Again, AMC deployed a rescue team from Fairfax County, Virginia and again, a C-5 aircraft deployed the team direct, nonstop to Taipei. This flight lasted 18 hours and required two air refuelings.

The year 2000 found USTRANSCOM supporting flood relief in South America and East Africa. In Venezuela, USTRANSCOM flew eleven C-17 and five C-5 missions, transporting 189 passengers and over 527 short tons of food, water, blankets, water purification systems, and other supplies. These missions helped the people of Venezuela recover from a devastating flood that left almost 400,000 people homeless, 20,000 to 30,000 dead, and destroyed 23,000 homes. In Mozambique, a 3-month relief operation resulted in the formation of Joint Task Force Atlas Response. During Atlas Response USTRANSCOM aircraft flew 596 sorties, carrying 1,172 passengers and 1,019 short tons of relief supplies to aid the almost 1 million people made homeless by the rising floodwaters from Cyclone Elaine.

In our own country, on 2 February 2000, AMC flew a nine-person team and 160,000 pounds of Navy search equipment to California to assist in the recovery operations for Alaska Airlines Flight 261 off the California coast.

This past summer saw the worst western wildfires in 50 years. USTRANSCOM and AMC flew 30 missions and deployed 3,682 Army and Marine passengers, and 206.7 short tons of equipment to battle the fires.

During this same time period, USTRANSCOM completed the first rotation of U.S. forces supporting Task Force Falcon in Kosovo via airlift and sealift. The redeployment returned the original participants to U.S. and European bases and deployed replacements from U.S. bases to Kosovo. In April of 2000, AMC flew over 130 Polish troops and 102.5 short tons of their equipment into Kosovo, marking the first time Polish forces had been transported aboard a U.S. aircraft in support of NATO requirements. Also, for the first time, USEUCOM used trains to transport peacekeeping troops and equipment from Germany through Bulgaria and Macedonia into Kosovo. This rail-overland approach saved 7 days from the normal 12-day sea-overland method previously used. USTRANSCOM also supported the sixth rotation of U.S. forces to the International Stabilization Force in Bosnia with strategic lift.

In October of 2000, the Aeromedical Evacuation (AE) System provided Strategic AE support to the 39 sailors injured during the USS COLE Bombing in the waters off of Yemen. The injured sailors were returned to the United States during a 2 week period utilizing strategic airlift coordinated by the Theater Patient Movement Requirements Center, located in Ramstein Germany and the Global Patient Movement Requirements Center, which is located at Scott Air Force Base (AFB).

Additionally, USTRANSCOM and AMC relocated our Denton Humanitarian Cargo receiving and shipping hub from Pope AFB, North Carolina, to Charleston AFB, South Carolina, offering more direct access to strategic airlift and sealift to better support this important program. Utilizing military airlift and sealift, the Denton program moved over 2.5 million pounds of humanitarian cargo from 86 donors to 39 countries in the year 2000 alone.

The events just described are only a "snapshot" of the missions USTRANSCOM performed or participated in since USCINTRANS last testified before this subcommittee. Though sometimes small in scale, the FBI deployments, Antarctic air-drop/rescue, earthquake relief, floods relief, airline crash recovery support, and wild-fire support efforts demonstrate the tremendous reach and responsiveness unique to USTRANSCOM's airlift forces. They are also representative of the myriad of tasks mobility forces must be prepared to execute, most often on very short notice.

Several points are important to note in assessing these events. For one, America's mobility force is often as busy in "peace" as it is in war. Even though responses to events such as Hurricane Mitch are not as large or sustained as ALLIED FORCE, such operations are conducted within peacetime manning and materiel constraints. At the same time, USTRANSCOM continues support for Joint Chiefs of Staff and regional CINC-sponsored exercises, ongoing operations such as NORTHERN and SOUTHERN WATCH, and channel airlift missions worldwide. As a result, the command's peacetime force structure must routinely surge to wartime operational levels. For aircrews alerted on short notice to fly relief support to disaster areas, move fighter and bomber squadrons to Southwest Asia or Europe, or replace deployed crews in moving channel cargo, the tempo can be very similar to wartime. The more frequently we do these missions, the more our people look and feel as if they are on a wartime footing during peacetime. The past few years have brought one deployment after another, hence the observation that USTRANSCOM is often as busy in peace as in war.

All the above aside, although USTRANSCOM is heavily committed around the globe conducting a wide variety of critical peacetime missions, our ability to support the warfighter during two nearly simultaneous MTWs is our paramount indicator of command readiness.

Readiness: Air Mobility

Our newest airlifter, the C-17, continues to exceed expectations. As of March 2001, the C-17 program has delivered 72 of 134 programmed aircraft, as we continue fielding the operational wings at Charleston AFB, South Carolina and McChord AFB, Washington, as well as the training squadron at Altus AFB, Oklahoma.

The C-17 is a tremendous success story. Without a doubt, it has very efficiently and effectively assumed its place as AMC's core airlifter as the C-141 retirement process continues. The C-17's reliability, versatility, and large capacity give combatant commanders options they never previously had at their disposal.

Unacceptably low C-5 fleet mission capable (MC) rates create a shortfall in meeting Mobility Requirements Study 2005 (MRS-05) mandates. MRS-05 requires a C-5 MC rate of 65 percent, but in the past year, C-5 fleet MC rates hovered at (and were frequently below) approximately 58 percent. Over the last 2 years, AMC had to begin the unusual, but necessary, practice of assigning two C-5s to its higher priority missions to better ensure the missions would be accomplished reliably and/or on time. The net result is less aircraft available for tasking and less flexibility. But, given the current C-5 fleet MC rate, we believe this concept of operation reflects judicious management of critical assets in support of an equally critical mission.

AMC's air refueling force performed superbly in ALLIED FORCE, and operationally is as ready as ever. That said, ALLIED FORCE (the Air War over Serbia) revealed two significant concerns. First, we discovered that our Reserve component tanker units need the same kind of maintenance spares kits as our Active-Duty units. Reserve component tankers are early deployers during large air campaigns and must be just as self-sustaining on arrival as our active units. Second, we revalidated our long held concern that AMC has a significant KC-135 crew-to-aircraft ratio shortfall. The current ratios of 1.36:1 and 1.27:1 (AMC and Mobility Forces, respectively) . . . inherited from the KC-135's Cold War days . . . are simply inadequate to meet our post-Cold War contingency requirements. ALLIED FORCE required a ratio of 1.8:1 (only slightly higher than that required for Desert Storm and similar contingencies since) and we expect that future air campaigns will likely require the same. USTRANSCOM and the Air Force are working to resolve both issues (spares kits and crew ratio) through funding and force structure initiatives.

To further quantify the future requirements of our 40-year old KC-135 force a Tanker Requirements Study 2005 and an Economic Service Life Study were recently completed. The results are just now being finalized and once complete, will allow us to better determine the most appropriate "way ahead" for this still reliable, but rapidly aging fleet.

Even though this statement highlights worrisome gaps in airlift capacity, low MC rates, insufficient crew-to-aircraft ratios, and shortfalls of spares kits, you can remain assured that our aircrews and supporting ground crews are highly motivated and extremely capable. You may also be assured that we are working hard with both the Air Force and DOD to try to find the funding required to resolve these significant air mobility shortfalls for current and future requirements.

Readiness: Sealift

Thanks to investments made in our surge sealift forces, they are, today, more efficient and better able to meet lift requirements than ever before. That said, the recently released MRS-05 study indicates that cargo delivery requirements for two MTWs have increased by one million tons relative to the requirements projected in our previous analytical guidance—Office of the Secretary of Defense's (OSD) 1994 Mobility Requirements Study-Bottom Up Review Update (MRS BURU). With this increased requirement as a backdrop, USTRANSCOM is working hard to identify solutions while building on today's successes.

Early access to commercial shipping, combined with containerization of unit equipment, significantly shortens the time required to close forces for the counter-attack phase of a MTW-type operation. Additionally, a properly sized and structured Voluntary Intermodal Sealift Agreement (VISA) program is essential to providing timely access to commercial shipping. Programs to improve the Ready Reserve Force (RRF) managed by the Department of Transportation's Maritime Administration (MARAD) have excelled at improving readiness. The RRF today is a well-maintained and ready force of 72 inactive ships plus four ships activated for prepositioning. As of December 2000, the RRF had completed 129 of 131 no-notice

activations on time since Desert Storm (a dramatic turn-around from our dismal Desert Storm experience). MSC's surge ships—Fast Sealift Ships (FSSs) and Large Medium Speed RO/RO (LMSR) ships—regularly support joint exercises and their prepositioning ships provide forward-deployed combat equipment and sustainment supplies to the regional CINCs.

Readiness: Forward Presence

Another vital component of USTRANSCOM readiness is forward presence. Each transportation component command has forward based units and deployed forces around the globe. MTMC operates at seaports in Europe, Asia, the Middle East, and in the Pacific where MTMC personnel interact with allied governments, militaries, and local authorities. These forward-based activities allow instant access to seaports as well as to lines of communication radiating from those seaports. MSC's area commands maintain operational control of MSC ships that are assigned to, or pass through, their areas of responsibility. They include MSC Atlantic in Norfolk, Va.; MSC Pacific in San Diego, Calif.; MSC Europe in Naples, Italy; MSC Far East in Yokohama, Japan and MSC Central in Manama, Bahrain. These commands not only serve as focal points for MSC customers in their respective operating areas but are also direct links to MSC ships for maintenance, logistics and other services.

AMC depends on a global network of ready, capable en route bases to support contingency and wartime deployments in support of regional CINCs. It is absolutely imperative that we continue to maintain adequate infrastructure at this declining group of core bases to support sustained strategic airlift operations during contingencies. Since 1993, major overseas en route air base locations declined 69 percent from 39 to 12. Of particular interest are the changes associated with two specific forward bases in Europe: Rhein Main, Germany, and Rota, Spain. USTRANSCOM presence at Rhein Main will end by 31 December 2005. United States Air Forces Europe has agreed to withdraw all U.S. forces from Rhein Main in exchange for a variety of key construction projects at Ramstein and Spangdahlem Air Bases, also in Germany. These projects do not add cargo or passenger throughput capability to the theater but are intended only to replace the capability lost at Rhein Main.

On the Iberian Peninsula, the Air Force left Torrejon Air Base, Spain, and has been working to obtain a like capability at Rota Air Base, also in Spain. USTRANSCOM's air component, AMC, must have at least two capable en route air bases on the Iberian Peninsula. Iberian bases are key to supporting NATO, as well as to managing the easterly strategic airflow required in support of potential areas of conflict in the middle east. Our Spanish en route bases are also blessed with more favorable weather and fewer air traffic control and overflight restrictions than our other European "oases."

Readiness: Partnership with Guard and Reserves

The readiness of USTRANSCOM relies very heavily on our TOTAL FORCE partners in the National Guard and Reserve components. USTRANSCOM, more than any other unified command, relies on its Reserve components for both peacetime responsiveness and wartime capability. In every mode—air, land, and sea—USTRANSCOM Reserve components provide a majority of the command's military wartime capability. Since USTRANSCOM cannot meet any significant requirements without the immediate participation of Reserve Forces, it is imperative that they are adequately funded for training and modernization.

USTRANSCOM's Reserve Forces are key to our peacetime responsiveness, and the command receives excellent support from Reserve volunteers. The Air Reserve Component (ARC) flies over 44 percent of AMC and local unit scheduled peacetime missions. These missions are accomplished both during scheduled monthly Unit Training Assembly periods, as well as during additional volunteer flying training periods. To support these missions, the aircrew must deconflict their flying commitments with their civilian responsibilities. Despite the high level of volunteerism, the Presidential Reserve Call-up (PRC) [formerly known as the Presidential Selective Reserve Call-up] is still essential for USTRANSCOM to be able to support any major contingency. Kosovo provides the most recent example where many volunteers responded but the command still needed a PRC to source approximately 3,300 additional personnel, most of whom were used to support the deployed air refueling force, since 57 percent of our capability now resides in the ARC.

A decision to request a PRC is not a business as usual proposition. It is an extraordinarily tough decision made only with full knowledge of the sacrifices it demands of our reservists, their families, and their employers. It cannot (and must not) be taken lightly or used too often.

Readiness: Partnerships With Industry

The readiness of the DTS also depends on timely access to militarily useful commercial transportation. USTRANSCOM's superb relationship with the U.S. commercial transportation industry allows DOD to leverage significant capacity in wartime without the added peacetime cost of sustaining comparable levels of organic capability. To ensure timely and efficient access to commercial capacity, the command has several agreements with industry.

For wartime airlift capacity, the Civil Reserve Airlift Fleet (CRAF) provides 93 percent of DTS international passenger capacity, 98 percent of DTS strategic aeromedical evacuation, and 41 percent of DTS international long-range air cargo capacity. It would cost the American taxpayer over \$50 billion to procure and \$1–3 billion annually to own and operate this capability as part of the U.S. military airlift fleet. Instead, the CRAF program guarantees peacetime business to participating airlines in exchange for their pledge to provide specified capacities in wartime.

Based on the above logic, it is imperative that USTRANSCOM do its best to ensure the CRAF program continues as the success story it has grown to be. Our CRAF partners voluntarily support an unpredictable wartime requirement and, in exchange, deserve as predictable a safeguard of their capital investments as possible. In this respect, Aviation War Risk Insurance is vital to assure our CRAF carriers that they can recover from significant loss or damage in support of DOD. The recent practice of passing 1-year re-authorizations strains the mutual commitment between DOD and our CRAF partners and is a disincentive to those in, or contemplating joining, the program. USTRANSCOM fully supports recent congressional efforts to enact Aviation War Risk Insurance legislation in a 4-year increment and would encourage similar treatment for the Defense Production Act, another CRAF-related statute.

For sealift we rely upon the commercial U.S.-flag fleet to move over 80 percent of sustainment cargo during wartime. The sealift companion to CRAF is the Voluntary Intermodal Sealift Agreement (VISA). Recently implemented in concert with MARAD and the U.S. maritime industry, VISA provides DOD wartime access to sealift capacity and intermodal infrastructure in return for peacetime business preference. When needed, VISA is activated in three stages of increasing levels of commitment. Implementation of this program, after several years of negotiations, is a major accomplishment for USTRANSCOM. DOD now has much quicker and far more effective access to U.S.-flag fleet capacities during both contingencies and war.

A third formal agreement with industry in support of DOD is the Maritime Security Program (MSP). MSP provides an underpinning for VISA by helping to guarantee the continued presence of a healthy U.S.-flag commercial fleet operating in international commerce, and available to provide sustainment sealift capability in time of war or national emergency. In return for MSP financial assistance, participating carriers commit vessels and other transportation resources for DOD use in the event of contingencies. These vessels also provide employment to a number of the U.S. merchant mariners needed to operate RRF, surge, and commercial shipping during wartime. Although we are confident MSP continues to ensure the availability of near-term manning of U.S.-flag sealift capacity, it has not stopped the disturbing decline in the U.S. population of qualified civilian mariners. It is essential that we continue to monitor this domestic maritime workforce and, as necessary, take whatever protective measures might be required to maintain the numbers we will need in time of crisis. In addition to MSP, bilateral shipping agreements with allied nations are also established to increase surge sealift capability in time of war.

All the above aside, USTRANSCOM's partnership with industry extends far beyond the formal contractual arrangements just outlined. In fact, the command interacts daily with the commercial sector in support of DOD customers. Commercial air and sea carriers carry tons of DOD cargo and thousands of DOD passengers annually, from scheduled channel air cargo and passenger movements to containerized cargo aboard ships destined for exercises, sustainment activities, and commissaries. Almost 70 percent of scheduled DOD passengers were carried by the commercial sector in 2000 and almost 40 percent of scheduled air cargo moved by commercial carrier.

It is imperative that USTRANSCOM continue to foster partnerships with industry and remain sensitive to the business environment in which our commercial partners operate. The U.S. transportation industry is vital to national defense and USTRANSCOM strongly supports laws such as the Jones Act, the Cargo Preference Acts of 1904 and 1954, and the Fly America Act that contribute to the health of those industries and our accessibility to them.

Readiness: Antiterrorism and Force Protection (AT/FP)

DTS transportation assets and information systems are vulnerable to a variety of threats worldwide that could diminish readiness in peace and war. The increased attempts by rogue elements to acquire missile technology, as well as weapons of mass destruction, threaten every element of the DTS. The threats to transportation information management systems grow as well, not just from potential enemies abroad but also from attacks at home.

Man Portable Air Defense Systems (MANPADS) are the most serious threat to our large, predictable, and slow flying air mobility aircraft. These systems are lethal, affordable, easy to use, and difficult to track and counter. According to a 1997 CIA Report, MANPADS have proliferated worldwide, accounting for over 400 casualties in 27 incidents involving civil aircraft over the previous 19 years. This proliferation has forced air mobility planners to frequently select less than optimal mission routes due to lack of defensive systems on airlift aircraft.

Increasing numbers of potential adversaries have developed, or are developing, sophisticated air defense systems. During ALLIED FORCE, concerns about the Yugoslav air defense system, especially mobile launchers and MANPADS, forced airlift planners to frequently use less efficient routings. To counter such threats, AMC and the Air Force are developing a Large Aircraft Infrared Countermeasures (LAIRCM) system to protect mobility aircraft.

Our merchant ships that carry large volumes of high value DOD cargo during contingencies are also vulnerable to attack—in port, at anchorage, and in transit through disputed waterways and choke-points worldwide. Since they may operate independent of naval escorts, we are reviewing options to ensure protection from a growing number of asymmetric threats, including piracy and terrorism. Due to the relatively small size of the crews aboard our merchant ships, technology must be the force multiplier that gives them the capability to detect, identify, and deter threats. MSC is developing a ship defensive system that will use thermal imaging and intrusion detection devices to help protect merchant shipping utilized by DOD.

Chemical or biological weapon attacks on en route or arrival airfields or seaports during deployments could significantly reduce throughput, slowing the deployment of combat forces. Even though our military aircraft and ships are prepared to operate in contaminated environments, our CRAF and VISA commercial carriers are not obligated to proceed into such areas. Given today's increased threat, we must provide reasonable protection for our commercial crews who, despite all precautions, could be exposed to contamination while supporting deployments. Additionally, AMC is developing and testing a procedure designed to protect commercial aircraft and personnel by reloading cargo from commercial aircraft onto military aircraft. This procedure will allow AMC to keep commercial aircraft flying into protected areas and to continue cargo movement into high-risk areas. This will hopefully ensure an uninterrupted flow of personnel and cargo into a theater.

Significant progress has been made in improving the protection posture of merchant mariners. Five of six Maritime Union Schools have been certified to teach chemical, biological, and radiological (CBR) defense courses and three of seven maritime academies are preparing to teach MSC-sponsored CBR defense courses. Today, all FSSs, LMSRs, and prepositioning ships are CBR defense-equipped and MSC recently received funding to begin purchasing CBR defense equipment for inactive RRF ships. As of October 2000, \$987,000 has been obligated to fully outfit 36 RRF vessels.

Progress is also being made in providing protection for CRAF aircrews. AMC stores and maintains protective clothing and equipment for issue to civilian aircrews prior to their entry into potentially hazardous areas. This equipment is currently stored in a central location for inventory and replenishment reasons and stands ready for immediate issue.

Readiness: Strategic Brigade Airdrop

Improved capability to mount a strategic brigade airdrop (SBA) of Army airborne forces is an important AMC readiness initiative. The C-17, as the C-141B's replacement for SBA, was initially unable to meet the Army's 30 minute SBA standard. Today, after working with the Army on both the C-17's hardware and procedures associated with SBA, AMC is now able to conduct an SBA within 28 minutes using a mix of C-17 and C-141B aircraft. By the time our C-141Bs have retired, we will have installed a Dual Row Airdrop System in the C-17 fleet, allowing our C-17s to drop twice as much cargo per aircraft, thereby decreasing the number of aircraft required for a C-17 only SBA and keeping formation "pass time" within the Army's time standard . . . another AMC/Army "good news" story.

Readiness: Joint Logistics-Over-The-Shore

I continue to be concerned about the readiness of our Joint Logistics-Over-The-Shore (JLOTS) capabilities . . . primarily due to the decline in CINC-sponsored JLOTS exercises. Many areas of the world, where we might be required to deploy, lack the kind of fixed port infrastructure required to offload the large ships that move the bulk of our land combat forces and sustainment cargo. JLOTS is a joint Navy and Army operation that utilizes a variety of landing craft, floating causeways and cranes, tug boats, and specially trained personnel to offload ships at sea and move cargo ashore without benefit of accessible or suitable ports. That said, to be able to implement this capability in a timely manner, it must be exercised regularly and realistically.

Since 1998, USTRANSCOM has been able to execute limited JLOTS exercises. Four of the last five scheduled exercises were cancelled due to real-world operations, funding shortfalls, operations tempo (optempo)/personnel tempo (perstempo) concerns, and host nation/local political issues. Robust, realistic exercises must be conducted regularly if a ready, reliable capability is to be sustained. JLOTS exercises are time consuming and difficult to simulate. Personnel and equipment must be put offshore, in the surf, and on the shore to maintain proficiency. The planning between maritime units responsible for JLOTS and combatant command staffs that employ JLOTS operations is invaluable. As the designated DOD proponent for JLOTS, USTRANSCOM will continue to encourage the regional CINCs to include JLOTS scenarios in their overall exercise programs, as well as to assist them in programming and planning future such exercises.

THEME TWO: MODERNIZATION

USTRANSCOM's modernization efforts are focused on being able to fully meet this Nation's strategic mobility requirements, across the spectrum of operations, while simultaneously reducing risk, ensuring future readiness, and providing a framework for meeting future MRS-05 requirements. Continued acquisition of the C-17, upgrade of our C-5 and KC-135 fleets, standardization and modernization of our C-130 fleet, completion of existing sealift programs, improvements to the network of bases which comprise our global transportation infrastructure, and upgrades to the tremendous capability enhancers inherent in our transportation information systems capability, are all key pillars of our comprehensive modernization program. Additionally, we are looking well ahead to identify, develop, and program projects for the inevitable future recapitalization of aging air mobility and sealift systems, as well as our global transportation infrastructure.

Modernization: Air Mobility

This country's number one Defense Transportation challenge (read: "shortfall") is with its strategic airlift fleet. A significant gap in our ability to meet the needs of DOD agencies (and specifically the needs of the regional warfighting CINCs) around the globe . . . due to a simple shortage in the number of airlifters available coupled with significant maintenance challenges associated with our fleet of C-5 airlifters. Consequently, USTRANSCOM's number one modernization goal is to, once and for all, complete the "fix" to our strategic airlift fleet. As suggested, one key to our airlift modernization requirement is a significant reliability enhancement and re-engining to AMC's C-5 fleet. The C-5 fleet represents 50 percent of this Nation's organic airlift capability and carries approximately 50 percent of our wartime outsize and oversize cargo. There is no other aircraft in the world that can do what the C-5 does for America. Unfortunately, over this past year, MC rates for C-5s have averaged approximately 58 percent, well below our wartime requirement. Only two projects are required to make the C-5 "well": an Avionics Modernization Program (AMP) and a Reliability Enhancement and Re-engining Program (RERP). The AMP is designed to replace all the high failure and unsupportable avionics and flight control systems on the entire 126 aircraft C-5 fleet and make the C-5 compatible with international standards required for flight today and tomorrow's increasingly restrictive Global Air Traffic Management (GATM) airspace. RERP will replace engines and pylons, and upgrade aircraft skin and frame, landing gear, pressurization, and auxiliary power units . . . the C-5's most unreliable systems. A number of independent studies have shown that C-5 modernization efforts could improve the C-5 MC rate to 75 percent (or higher) by 2014, as well as extend the aircraft's service life past 2040, while simultaneously reducing our cost of ownership by over \$11 billion in Life Cycle Costs.

At the request of the OSD, AMC has completed an Outsize and Oversize Analysis of Alternatives, focused on the increased MRS-05 airlift requirement, that defines needs, options, and costs, and using those inputs, recommends solutions. To meet

this Nation's peacetime and wartime outsize and oversize requirements, results of that analysis recommend an operationally effective, best value mix of RERPed C-5s and new purchase C-17 aircraft. We agree completely with that analysis. America cannot afford to lose the C-5 fleet's organic capability or allow it to continue to atrophy. Without it, simply put, the cost and risk associated with meeting our wartime requirements would be unacceptable.

In fact, it was USTRANSCOM's inability to meet our warfighting oversize and outsize airlift cargo requirement which led to the decision to significantly modernize the Air Force's strategic airlift fleet through the acquisition of the C-17 aircraft. That said, even with the currently approved C-17 "multi-year procurement" program, we will still fall approximately 10 percent short of being able to meet even the our operational war plans. Complicating matters even more, the ongoing retirement of our C-141 fleet (Active Duty by fiscal year 2003 and Guard/Reserve by fiscal year 2006) is rapidly putting Air Mobility Command in a position, based on a simple shortage of airframes, where with increasing frequency, it is losing the flexibility to reliably and efficiently meet the country's peacetime requirements. Simply put, the authorized C-17 fleet of 134 programmed aircraft cannot and will not offer the same flexibility as did the 256 aircraft C-141B fleet it is replacing. Based on the current program, USTRANSCOM simply will not have as many aircraft "tomorrow" to meet its constantly increasing peacetime requirement, as it did "yesterday."

Bottom line: this Nation's number one DTS "shortfall" is its ailing and numerically inadequate strategic airlift fleet. The simple solution to this challenge is at hand: We must get on with modernizing our C-5 fleet (AMP and RERP) and we must continue the C-17 acquisition program—up to the requirement specified in the recently released Mobility Requirements Study—2005 (MRS-05). Without a doubt, fixing Strategic Airlift is our number one DTS imperative.

The ongoing modernization of the Air Force's 546 KC-135 air refueling tankers involves two primary programs: The first, an ongoing avionics modernization program called Pacer CRAG (Compass, Radar, and Global Positioning System) will be completed by 2003. Besides improving the aircraft's operational capability, Pacer CRAG reduces required aircrew members from four to three and significantly reduces maintenance costs. The second program proposes modifying 45 KC-135s to a MultiPoint Air Refueling System configuration, purchasing 33 MultiPoint kits by 2007. Unlike Air Force aircraft, Navy, Marine and many allied aircraft require drogue nozzles for air refueling; yet only our KC-10 tankers currently have the ability to perform boom refueling and drogue refueling on the same sortie. KC-135s must currently land and be re-configured with a drogue adapter system for drogue air refueling missions. A MultiPoint capability on 33 aircraft will significantly increase our ability to provide air refueling to our sister services, as well as to our allies.

The C-130 fleet consists of 700 aircraft composed of 15 different models and 20 variations. There are 514 basic combat delivery C-130s and USTRANSCOM owns 346 of them. Within USTRANSCOM, the C-130 serves two primary purposes: power projection and intratheater support of deployed forces.

There are several challenges facing the C-130 fleet. The average active duty aircraft is 28 years old. Several of these aircraft will reach the end of their service life as early as 2002, and older onboard equipment across the remainder of the fleet is rapidly becoming obsolete and cost prohibitive to maintain. Three years ago, an AMC Tiger Team studied the problem and recommended replacing the oldest C-130 models with new C-130Js and modifying those with the longest remaining service life to a common C-130X configuration.

The Air Force plans to purchase approximately 150 combat delivery C-130Js, retire an equivalent number of C-130Es, and modify the remaining 397 C-130E/H model aircraft to the standard "X" configuration. As with the KC-135 Pacer CRAG program described above, the core of the C-130X program is a total cockpit Avionics Modernization Program (AMP). While we're at it, AMP will incorporate the requirements of the GATM environment, to include required upgrades to communications, navigation, and surveillance systems. The C-130 AMP is currently in source selection and the contract is expected to be signed in spring 2001.

USTRANSCOM's number one force protection concern is with the vulnerability of its large, slow-flying aircraft to the "terrorist" world's increasing shoulder-fired surface-to-air missile (MANPAD) capability. Consequently, high on our priority list is fielding of a Large Aircraft Infrared Countermeasures (LAIRCM) system which can counter that threat. The cost of this program, with an ultimate objective of equipping all "at risk" mobility aircraft, is substantial, but we feel the cost of losing a large airlifter, an aircrew, or its critical passengers and/or cargo is significantly greater. Currently, funding is approved in fiscal year 2001 for research, development, test and evaluation, and installation of LAIRCM on 20 aircraft (12 C-17s and

8 C-130s). Additional funding and options for additional installations will be coordinated in future Air Force Budget submissions.

To operate in the increasingly crowded international airspace environment, AMC is committing more than \$6 billion to modernize the communications, navigation, and surveillance systems of its air mobility fleet. As suggested, a modern and capable Global Air Traffic Management (GATM) suite is essential for access to the optimal but increasingly congested flight routes through which we are required to operate. To prevent backlogs, air traffic controllers must put more aircraft in the same airspace. In order to comply with international agreements related to safety, traffic separation, and communication, and for AMC aircraft to continue to be allowed access to this increasingly congested controlled airspace, we must keep pace with the GATM requirement.

Modernization: Sealift

Sealift modernization is a good news story. Our sealift capability meets three critical requirements: prepositioned equipment and supplies afloat for immediate response, surge for rapid power projection, and sustainment for support of protracted operations. Thanks to the commitments of the Navy and MARAD, our sealift force—including surge, RRF, and prepositioning—is more capable and ready today than it has ever been. By 2002, when our last LMSR is delivered, we will, at long last, meet the sealift requirements specified in the 1994 MRS BURU. That said, we do know that the total sealift requirement grew somewhat in the recently completed MRS-05 study. As well, our continuing concern with the shortage of heavy lift vessels required to deliver smaller floating craft has still not been resolved. We will be addressing solutions to these two issues in the months to come.

Of 19 LMSR ships originally programmed, 18 have been launched and 15 delivered. The latest, named after Medal of Honor recipient Private First Class Ralph E. Pomeroy, was launched 19 March 2001. Recently, a decision was made to make modifications to an existing LMSR, to use it to complete the Marine Corps' Maritime Prepositioning Force-Enhanced (MPF-E) program, and to build a 20th LMSR to complete the Army's prepositioning program. This win-win solution further enhances our sealift forces by adding capacity to the original MPF-E program and giving the Army a new LMSR to meet its requirements.

MARAD continues to improve the RRF. Recently, it reconfigured several existing ships to provide additional deck space and modified existing spaces to increase overall capacity. As good as it is today, the current force is aging and will, over time, become more costly and difficult to maintain. Recapitalization of the sealift capacity provided by the RRF will eventually be necessary and we must plan and program accordingly to avoid having sealift capability decline again to its woeful pre-Desert Storm condition. Therefore, I wholeheartedly urge that we continue the funding, vigilance, and vision that sustain current levels of sealift readiness and capacity for the long term. Similarly, funding and vigilance to sustain the readiness of MSC's surge forces, the FSSs and LMSRs, must remain a priority in order to preserve these vital front-line deployment assets.

Modernization: Infrastructure and Enablers

Modern infrastructure, in CONUS and overseas, is critical to rapid and/or timely and efficient strategic deployment. Our domestic infrastructure of aerial ports, sea ports, railheads, and connecting highway and rail arteries are the "launch platforms" we use for our strategic deployments. As a predominantly CONUS-based force, these "launch platforms" mean more to us today than ever before. Overseas, our en route air mobility bases and seaports remain key to moving forces into a theater of operations. In the wake of the Cold War, our CONUS and overseas mobility infrastructure has been stressed in two fundamental ways: first, we have fewer overseas bases through which we can operate, and second, an increased (and increasing) deployment optempo is stressing that fewer number of bases in ways they have never been stressed before. Along with the Services and regional CINCs, USTRANSCOM must continue to diligently monitor our global mobility infrastructure and keep up with needed repairs and improvements.

For example, to sustain large airflows during peacetime and wartime, AMC requires access to a network of air bases worldwide with sufficient fuel systems, ramp space, and other servicing facilities to accommodate large numbers of large aircraft. USEUCOM, USTRANSCOM, and the Joint Staff identified the need for at least six primary en route air mobility bases in USEUCOM and, partnered with DLA, have developed a comprehensive plan to improve the infrastructure at those bases. Likewise, we are working with United States Pacific Command (USPACOM) and DLA to identify and fix en route base shortfalls in the Pacific region. In fact, DLA and Air Force budgets now support all identified en route fuels projects. Significant con-

struction began several years ago and continues in fiscal year 2002, but the infrastructure will not “get well” (i.e. fully meet the requirements laid out in our war plans) until the end of fiscal year 2006, and then only if all projects remain on track. Therefore, en route infrastructure investments will continue to be among the highest priorities at USTRANSCOM for some time to come.

Over the past several years, Congress has been generous in providing USTRANSCOM with a modest separate funding line labeled Mobility Enhancement Funds (MEF). MEF infrastructure projects are, by definition, relatively low in cost (less than \$5M) but with an excellent cost-to-benefit ratio. MEF provides funds for small, less glamorous, but high payback, improvements that are otherwise overlooked by the Services. Since Desert Storm, MEF has improved rail links to ammunition depots and military installations and funded a host of runway and ramp improvements in CONUS and around the world, contributing significantly to an increasingly efficient and effective DTS . . . in peace and crisis.

An important milestone occurred last year when MTMC took over operation of a portion of Concord Naval Weapons Station, California. Previously, the only developed ammunition seaport for unrestricted operations was Sunny Point, North Carolina. Very important to our war plans, further development of this key West Coast ammunition port will significantly reduce shipment times to the Pacific region and provide much needed redundancy for strategic munitions sustainment.

Another important enabler in need of modernization is the Army and Navy’s JLOTS capability. The challenge? There is minimal JLOTS equipment forward deployed and current equipment can only offload ships during sea state two conditions (relatively calm seas) or less. We believe the regional CINCs will benefit significantly from a sea state three (SS³) capability, currently under development, that in some regions would allow substantially more operating time in rough seas. As suggested, the Army and Navy have programs in place that should attain SS³ capability by 2005 if fully funded.

Modernization: Mobility Requirements

MRS-05, mentioned earlier, identified a mobility requirement baseline for the beginning of the new millennium. A more comprehensive and realistic analysis than ever before conducted, MRS-05 used the fiscal year 2005 programmed force structure for all Services as outlined by defense planners and Service programs. The scenarios explored in the analysis also recognized the increased complexity involved in deploying forces from our post-Cold War global engagement posture, as well as our need to be able to respond to asymmetric attacks by enemy forces, including attacks using chemical weapons. This comprehensive, 2-year, end-to-end analysis looked at mobility requirements within the CONUS, between theaters (inter-theater mobility), and within individual theaters (intra-theater mobility). While prepositioning, surge sealift, and CONUS transportation assets were found largely satisfactory, some improvements are required in each area. That said, the most dramatic finding in the new study was its validation of the consensus belief across the DOD that we are operating today with a significant strategic airlift shortfall.

Of particular interest has been the JCS and CINC review of the study. Without exception, their review supports an increased strategic airlift requirement of 54.5 million ton-miles per day (MTM/D) to meet the mandates of the National Military Strategy at a minimal “moderate” level of risk (. . . versus the 49.7 MTM/D requirement goal outlined in the 1994 MRS-BURU study, and our current approximately 45 MTM/D capability). While USTRANSCOM fully supports the Chairman’s recommendation of a minimum 54.5 MTM/D, it must be understood that the range of options varied from 51.1 MTM/D up to 67 MTM/D. When the assumptions are adjusted, the study shows a significantly higher demand for organic (military) airlift assets and capability.

Modernization: Shaping the Future DTS

Given the probability, at some point in the near-future, that the CINCs will be tasked, once again, to support an operation on the high-end of the spectrum of conflict, i.e. a high intensity Small-Scale Contingency or a Major Theater War, the Services are working hard to transform themselves to meet the challenges of the 21st century.

Responding to this reality, the Army has articulated a new vision for a strategically responsive and dominant force designed to meet the full spectrum of future military operations. The Army’s “Transformation” will occur in three phases, culminating in an “Objective Force” whose goal is to send a brigade anywhere in the world in 96 hours, a division in 120 hours, and five divisions in 30 days.

Similarly, the Air Force has transitioned to an Expeditionary Aerospace Force (EAF) structure to improve its responsiveness to the diverse needs of our National

Security Strategy and the warfighting CINCs. Organized into smaller Air Expeditionary Force (AEF) packages, the EAF provides standard sets of capabilities to the regional CINCs while simultaneously providing more stable, predictable rotations for Air Force people. The Air Force goal is to be able to deploy five AEF modules anywhere in the world in 15 days.

As a supporting command, USTRANSCOM's job is to be able to rapidly project these transformed forces quickly and reliably anywhere in the world. The future DTS must be as flexible as technology will allow, complete with state-of-the-art information systems, modernized transportation vehicles and support equipment, and top-of-the-line trained personnel to operate the technology. Simultaneously, USTRANSCOM's operational processes must be updated to take advantage of the technologies and capabilities we are pursuing.

It is obvious that future strategic mobility aircraft and ships will need to move greater amounts of cargo faster. Among the possible capabilities that we are studying include: high speed sealift vessels that cross the oceans and offload cargo in a fraction of today's time; large airships that carry several times the cargo of today's airlifters; floating off-shore base modules that are moved to crisis areas and assembled as multi-modal transshipment bases; super short take-off and landing tactical transports that carry C-130 size loads to small, austere landing zones; and multi-mission strategic mobility aircraft with a common airframe for airlift and aerial refueling (and perhaps even Command and Control, Reconnaissance and Surveillance). USTRANSCOM, along with industry, is actively exploring these and other future technologies and concepts for military and commercial use. Given current lead times for design and development, it is imperative that we stay abreast of industry initiatives, articulate militarily useful requirements, and insert them early in the design of future systems.

Every regional CINC knows well that he cannot prosecute his mission without adequate and reliable strategic lift.

On 27 March 2001, Gen Tommy Franks, CINC, U.S. Central Command, testified before the Senate Armed Services Committee. His comments are representative of what I hear from the other regional CINCs every day:

"With few permanently stationed forces in the region, our vitally important power projection capability depends upon strategic lift and robust land and sea-based prepositioned assets. Our ability to deploy forces and equipment quickly remains the linchpin for conducting rapid response to contingencies in USCENTCOM's AOR. We must continue modernization and maintenance of our strategic deployment triad: airlift, sealift, and prepositioning.

The accelerated retirement of the C-141 fleet and the significant challenges of maintaining readiness levels of the C-5 fleet make continued production of the C-17, progress toward C-5 modernization, and support of the CRAF program critical to meet major theater war deployment timelines. Our requirements for strategic airlift combined with intratheater airlift are addressed in MRS 05, which we support.

The procurement of Large Medium Speed RO/RO (LMSR) ships is on track and will significantly enhance our lift capability. Under the current procurement plan, we will meet our force and sustainment deployment timelines with these LMSRs and Ready Reserve Force (RRF) assets by the end of fiscal year 2003.

Prepositioning in the region, the third leg of the strategic deployment triad, helps mitigate our time-distance dilemma, ensures access, demonstrates our commitment to the region, and facilitates sustainment of forces until the Sea Lines of Communication (SLOCs) are established"

THEME THREE: PROCESS IMPROVEMENTS

Our processes, the collection of rules and procedures which govern our day-to-day business practices are under constant revision as we seek to improve the speed and reliability of our customer service. Our goal is a set of "most effective and efficient" processes that are applicable across the entire spectrum of our activities, from interaction with our commercial transportation providers to our "warfighter CINC" customers. Whether the issue is information technology, supply-chain management, doctrine or training, USTRANSCOM is constantly searching for the best business practices available today.

Process Improvements: Information Management

DOD relies on USTRANSCOM to do more than just provide multimodal planning and transportation support to U.S. forces worldwide. We also provide information systems critical to managing the DTS. Our systems are robust, reliable, and available to our customers worldwide. Transportation management today is not just about moving people and cargo but also about the timely and accurate movement of shipment information.

The role of information technology (IT) at USTRANSCOM today has moved beyond being a great enabler of our current procedures, to the point now where it has become the catalyst for the introduction of new processes designed to change future business practices. In order to maximize IT investments and mission support, USTRANSCOM has designated a Chief Information Officer (CIO) to conduct strategic planning and IT management. The USTRANSCOM Command, Control, Communications, and Computer Systems (C4S) Director fills that function and today wears two hats: CIO in peacetime and Director of C4S in wartime.

The USTRANSCOM CIO and I are working closely together to develop an enforceable enterprise-level architecture. It is our vision that such an architecture, properly constructed, will establish system, technical, and operational views of the present and future that will set the policy and chart the development of information technology solutions for as far out into the future as we can see. The architecture documenting our current environment was delivered in 1998, and in December of 2000 we completed our "To-Be" Enterprise Architecture. Now, we are focused on establishing the foundation for managing our information technology investments.

The Global Transportation Network (GTN) is USTRANSCOM's pivotal information system for the management of transportation information both today and in the future. GTN is changing the way military organizations and our commercial partners conduct their operations. In fact, USTRANSCOM is moving to the next phase of GTN process improvement with the recent announcement of our GTN 21 initiative. With near real-time visibility of high priority materiel moving through the DTS, customers can make operational decisions faster than ever before. GTN is linked to a wide variety of transportation IT systems across DOD and the commercial transportation sector, contributing significantly to total in-transit visibility (ITV), i.e. the ability to track the identity, status, and location of any passenger or piece of cargo moving in our system. Today, commanders, planners and logisticians, whether they be on CINC-level staffs or in tactical units on the battlefield, expect accessible and reliable ITV. USTRANSCOM is dedicated to giving it to them—from end-to-end.

Within AMC, Mobility 2000 (M2K) is another 21st century process improvement designed to guarantee a near real-time digital data link connection between AMC aircraft and our worldwide command and control centers, to include Federal Aviation Administration en route air traffic control centers. M2K will significantly improve both our capabilities and our safety, linking AMC not only to our aircraft, but also to this country's global network of air traffic control systems, allowing totally integrated flight management. We will begin M2K modification of our aircraft in fiscal year 2002 but, unfortunately, based on current funding availability, will not be able to complete the program until fiscal year 2014.

Process Improvements: The Deployment Process

USTRANSCOM is also pursuing a number of initiatives, many in partnership with United States Joint Forces Command, to improve the deployment process. One of the most far-reaching projects currently underway is orchestration of the several sub-initiatives associated with the Chairman of the Joint Chiefs of Staff's 72-hour standard for generation of Time-Phased Force and Deployment Data (TPFDD) required for any sizable deployment of DOD forces. The TPFDD is basically a list and schedule of deploying units and all their deploying equipment and is typically developed jointly by the combatant commander, the Services, and USTRANSCOM. In the past, TPFDDs have taken weeks to develop and implement. Our improvement initiatives include four key areas for improvement, which we believe, collectively, will decrease the time required to develop the TPFDD down to the Chairman's desired standard.

Process Improvements: Leading DOD's Distribution Revolution

Currently no single DOD organization is tasked with measuring the overall effectiveness, design, or optimization of DOD's global distribution/supply chain management system. As a partial remedy to this disconnect, in February 2000 the Defense Logistics Agency (DLA) and USTRANSCOM partnered to lead a revolution in DOD's supply and transportation systems. The primary goal of our "revolution" has been to create a warfighter-based, value-added, logistics capability which will allow DOD to more rapidly, effectively and efficiently fulfill its mandate under the National Military Strategy. The key component of our partnership is the Strategic Distribution Management Initiative (SDMI), an initiative formed to provide senior DOD leaders with logistics process improvement recommendations that balance four major customer focus areas: service, cost, readiness, and sustainability.

SDMI "cutting edge" efforts analyze and compare current distribution requirements, patterns, processes, and systems against an ideal "to-be" integrated distribu-

tion supply chain. The initiative is designed to optimize support to the warfighter by analyzing material stockage through warehousing, storage, distribution, and strategic transportation practices and linking them to each regional CINC's joint theater distribution system. In the short time since we set off on this journey, SDMI has conducted in-depth analyses of the air and surface distribution channels, performed modeling and simulation diagnostics, and started developing processes and digital tools that imbed velocity in our customer support. SDMI's initial focus is on four major areas: stock management, surface distribution, air distribution, and financial processes. A flag officer heads each effort in consultation with OSD, the Joint Staff and military service representatives.

Process Improvements: Command Streamlining

USTRANSCOM has fully embraced a series of organizational initiatives designed to streamline our operations and increase effectiveness. A prime example of these changes is taking place within our Army component, Military Traffic Management Command (MTMC). MTMC has adjusted portions of its headquarters staff and shifted some planning and operational responsibilities to its subordinate commands while simultaneously centralizing personnel, logistics, administration, resource management, passenger, and personal property functions at their headquarters in order to keep field elements focused on force projection and sustainment. MTMC has also standardized the organization and size of its battalions and groups making them more flexible and responsive and better able to project Deployment Support Teams worldwide, thereby making MTMC forces more flexible and responsive. These centralization and standardization changes have produced impressive results. MTMC is now operating with a 5 percent smaller staff and has realized a \$57.6 million cost avoidance over the last fiscal year.

Future initiatives at MTMC will pursue contracting for the management of container and rail assets, and address options for better integration of operational functions up and down the chain of command, as well as across commands. Through all of this, USTRANSCOM and MTMC will continue to work with our commercial partners to identify, evaluate and, where appropriate, pursue better business practices to improve our support to our customers.

Process Improvements: Agile Transportation for the 21st Century

With one eye always on the future, USTRANSCOM is initiating an Advanced Concept Technology Demonstration that will concentrate exclusively on enhancing the DTS. As the single manager for the DTS, USTRANSCOM requires system-wide visibility of all transportation assets and intermodal resources to optimize the employment of its lift capabilities in response to movement requirements. Agile Transportation 2000 (AT 2000) will enable USTRANSCOM to better determine transportation feasibility, estimate costs, project throughput capability, foresee potential choke points, and make modal and intermodal decisions. AT 2000's operational objectives include:

- Development of decision support tools to better manage the DTS in peacetime and in crisis surge modes
- Cost Avoidance for DTS services for CINCs and services
- Improvements in the quality of service for component customers

Finally, a major goal of Agile Transportation for the 21st century is to develop a "near real-time" capability to provide a transportation plan to a supported CINC within 4 hours of USTRANSCOM receiving the CINC's TPFDD.

Process Improvements: Business Practices

The longstanding partnerships between USTRANSCOM and commercial industry afford a unique opportunity to infuse best business practices of the civilian sector into the DTS. Recognizing this opportunity, the Secretary of Defense designated USTRANSCOM as DOD's first "Reinvention CINC." Since that time, USTRANSCOM has played a key role in the development of reinvention proposals that will change the way DOD does business in the areas of business finance, workforce and organizational shaping, and process streamlining. For example, USTRANSCOM is seeking:

- *Improved financial controls*—real-time visibility of our financial status and improved flexibility in directing funds toward emerging opportunities.
- *Improved organizational controls*—the ability to shape our workforce and organizational structure in response to changing market conditions.
- *Improved process controls*—the ability to rapidly evolve our business rules, information processes, and contracting decisions for optimal efficiency and effectiveness.

Process Improvements: Management Reform Memorandum #15

A significant change is taking place in the way USTRANSCOM conducts its day-to-day business with its customers and vendors. Government-unique documents are going out the window. In their place are commercial forms and streamlined automation of our business practices.

Improvements to USTRANSCOM's business processes have been underway for some time. That said, our efforts have been elevated to the next level with our implementation of Management Reform Memorandum #15 (MRM-15)—Reengineering Defense Transportation Documentation and Financial Processes. MRM-15 memorandum, signed July 7, 1997, by Deputy Secretary of Defense John Hamre, set in motion a revolution in business practices for DOD transportation services.

USTRANSCOM is the functional manager for MRM-15, which is virtually overhauling our defense transportation and payment processes. The changes we are making streamline procedures, reduce paperwork, and eliminate the need for government-unique payment centers dedicated to paying transportation services. A major initiative under MRM-15 eliminates government-unique documentation, to include freight Government Bills of Lading and military manifests for commercial sealift movement.

Currently, the DOD is using U.S. Bank's PowerTrack service, an online payment and transaction tracking system, basically reducing the payment cycle to carriers from an average of 60 days to 3 days. This new service is now used almost exclusively for worldwide express movements and sealift intermodal container service, as well as for commercial transportation payment of freight movements within the US. Additionally, PowerTrack's single-source information center provides instant access to shipment data for both carriers and shippers. Furthermore, it automates reconciliation of freight bills and invoices, and guarantees timely payments. A collateral benefit is that PowerTrack provides a strong information component which will serve as an analytical tool to accelerate our move into true distribution management for the entire DTS.

Process Improvements: Personal Property Enhancements

Our effort to improve the household goods (HHGs) movement process is a critical quality of life issue for DOD members. The current program, unchanged for 35 years, has drifted far from the quality move our service members and their families deserve. To remedy this unsatisfactory situation, and based on congressional language in the National Defense Authorization Act (NDAA) for Fiscal Year 1996, three different, but related, pilot programs are currently ongoing.

All three pilot programs have proven themselves to be significant improvements over the current program. Unfortunately, since the onset of these initiatives, because they are still only pilot programs, only a small number of DOD members have experienced the program improvements our "test group" has enjoyed. At best we have "touched" only an estimated 46,000 of the 613,000 households we move each year. Consequently, less than 10 percent of our shipments have received any of the benefits a complete HHGs reengineering will bring. That still leaves 567,000 shipments per year unaffected by any real systemic improvement. Left to its scheduled course, our HHG reengineering efforts will not touch the remainder of these DOD families for several more years. We believe DOD can realize improvements much sooner than planned by incorporating those successful pilot features which have already proven successful across all three initiatives into the current program now. It is USTRANSCOM's recommendation, for the good of DOD personnel worldwide, that we incorporate these core cross-pilot initiatives now versus waiting until the pilots are complete and the final report rendered.

To bring these pilot successes into the current program, we have established a task force team, comprised of industry representatives and DOD personnel, to review and coordinate the proposed changes. As a reminder, our proposal to begin integrating our most successful pilot features into the current program now is not intended to replace or stop the pilots, but merely to capitalize on their successes early—with the real winner being our military families around the world.

As demonstrated in the ongoing pilots, there is additional cost associated with giving our Service members the kind of move they deserve. Today, our Service members not only receive a substandard move, they also simultaneously incur a host of out-of-pocket expenses not covered by their moving allowances. That said, we are aware that the military services have not programmed the necessary funds near term for the increased costs required to fix this unsatisfactory situation. Therefore, to lead turn this, USTRANSCOM has begun soliciting the support of senior leaders in DOD, the administration, and Congress to begin identifying funds now, so that we can start including these core improvements in our fiscal year 2002 move pro-

gram. In my view, we cannot start too soon to rectify our deplorable HHGs movement system.

Process Improvements: Global Privately Owned Vehicle (POV) Contract

Another critical quality of life issue for military personnel assigned overseas is the movement of POVs to new duty stations. In September 1998, MTMC awarded a 2-year contract with three 1-year options to handle the approximately 75,000 vehicles per year that DOD ships. Now in its first option year, the program is a real success story. Customer satisfaction rates are up from 77 percent to 99 percent and claims ratios have decreased from 11 percent of shipments to 5 percent. Furthermore, because all CONUS vehicle processing centers are contractor-owned and operated, MTMC has realized outsourcing cost savings through the closure of 12 government-owned vehicle processing centers and the reduction of 39 positions. The contractor assumes full movement responsibility and full claims responsibility up to \$20,000 per vehicle except during the ocean portion of the shipment. Any responsibility for ocean damage is with the ocean carriers in accordance with the separate contract with them. With this new POV shipment program, along with enhanced intransit visibility, DOD has simultaneously realized a strengthened partnership with ocean carriers, supported our VISA participants and VISA program goals, and promoted financial stability for our partner ocean carriers. The program has been so successful that the projected cost of the 2-year contract fell from the original \$394M to \$350M, a savings of \$44M. Rates per POV fell \$70 for the three option years, providing savings in those years of \$5M per year and \$15M overall. Effective the second quarter of fiscal year 2001, the contractor assumed responsibility for vehicle cleaning and agriculture inspections at no cost to the government (saving an additional \$1.5M), developed a new computer system to provide total end-to-end visibility of POVs in shipment and absorbed the \$3M in costs for that system.

Process Improvements: Aeromedical Evacuation (AE) System

It has been recognized that today's AE system was built for "a world that no longer exists." With the reduction in DOD's overseas medical footprint since the end of the Cold War, we have seen an increased requirement for a more rapid, responsive AE system. Last year, an AE Tiger Team formed by Air Mobility Command reviewed the existing system, end-to-end, and proposed a more responsive, flexible, and capable system adaptable to missions across the spectrum of operations. The goal is to build a single, integrated, requirements-based AE system that operates as efficiently in peacetime as it is designed to operate in war.

THEME FOUR: PEOPLE

It should go without saying that the real strength of USTRANSCOM's readiness and warfighting capability lies in her exceptional men and women. It is only through their frequently extraordinary efforts that we are able to provide and maintain a ready, dependable DTS . . . around the world, every day. In these times of increased operations tempo, we must remain sensitive to the quality of life of our Service members. Meeting their needs not only leads to better readiness and higher retention, it is simply the right thing to do.

That said, I am not encouraged with the trends associated with retention of our highly-trained aircrews. To be blunt: pilot retention is at historic lows . . . a condition which stretches USTRANSCOM's ability to maintain readiness. I am also concerned by significant losses of experienced enlisted aircrew members. The percentage of aviators accepting increased retention bonuses rose slightly this past year but still falls below the level we require to sustain the force. Just as troubling, second-term reenlistment rates, my primary indicator of enlisted retention, are dropping significantly among several critical support fields, and it appears that monetary incentives alone are not going to solve the problem.

In addition to inadequate compensation, "workload" is the other factor at the root of our retention problems. Aircrews and support personnel spend too much time away from home or work too hard while they are at home compensating for deployed personnel and training time lost to previous deployments. Today, as I said earlier, the peacetime workload is often as heavy for active duty aircrews and support personnel as during wartime. The situation becomes even more tenuous for our guardsmen and reservists who must balance high peacetime operations tempo demands with the stresses of their civilian careers. Although we have taken some steps to mitigate the effects of the unprecedented peacetime operations tempo, now we need to take the next step and increase support manning and aircrew-to-aircraft ratios to the levels required in this new environment in which we are operating.

With our frequent wartime optempo going head-to-head with manning levels and ratios established in the Cold War, we are wearing our people out and as a con-

sequence, many who would prefer to stay are leaving for more stable and predictable civilian careers. In my view, it is more cost-effective to increase manning than to have to continually prematurely replace experienced personnel . . . and I suggest that it is "high time" we got on with fixing the problem.

Another USTRANSCOM area of concern is the availability of trained and qualified merchant mariners. The goal here is to ensure a trained and efficient U.S. merchant marine workforce sufficient to support domestic and international waterborne commerce as well as to guarantee national emergency and wartime sealift and auxiliary manning needs. MARAD supports the maintenance of a viable U.S. merchant mariner pool through the MSP, enforcement of cabotage laws, enforcement of government cargo preference requirements, and maritime training and education. DTS prepositioned, surge, and sustainment sealift are all dependent on this pool of qualified U.S. merchant mariners. While no significant problems are apparent in manning the surge fleet through fiscal year 2003, the projected speed of mobilization, combined with the projected length of future conflict, portends significant shortages. Current "drags" on the pool of merchant mariners include the relative unattractiveness of the career due to salaries, lifestyle, and work environment. Limited new vessel construction coupled with the reduction in crew size required on our newer ships is aggravating the situation. Through MSC, USTRANSCOM is partnering with maritime labor organizations, the U.S. Coast Guard (USCG), and MARAD to refine a mariner tracking system and to develop contingency sealift crewing processes and mechanisms. This partnership will look at methods of increasing the availability of both licensed and unlicensed mariners while simultaneously continuing to urge the administration and Congress to support those programs that serve to maintain this critical personnel resource pool into the future.

Over the past 2 years, there have been significant enhancements in the military health system, making the TRICARE benefit more accessible to our entire military family—both to our active duty members and their families, as well as to our retirees of all ages. We are grateful to Congress for the hallmark provisions of the fiscal year 2001 NDAA, which—among other things—expanded the military health care benefit for active duty members and their families, returned military health care to our Medal of Honor recipients, and perhaps, most significantly, returned the promise of health care for life to our senior patriots (over age 65), as well as extending to them the comprehensive pharmacy benefit they so richly deserve. Over the past several years, Service members have voiced apprehension that benefits promised to them upon entering the military have changed or may change in the future. They wondered if the quality health care promised to them and their families would be there when they need it. They watched to see how we kept faith with retirees and placed significant weight on this factor when making their career decisions. I am hopeful that this year's landmark legislation will reaffirm for active duty members our Nation's commitment to truly take care of them and their families if they choose a career with us. Indeed, if we can regain and retain the troops' confidence, this legislation can be a tremendous retention tool.

That said, even with the great strides that have been made at the legislative and operational levels in improving our military health care program, many challenges remain. Although patient satisfaction with TRICARE has steadily increased over the last several years, issues surrounding access, claims processing, and other bureaucratic "hassles" associated with the program are still major "dissatisfiers" among our beneficiaries. Recent programmatic and legislative changes to the program, such as the fiscal year 2000 NDAA introduction of Beneficiary Counselors and Assistance Coordinators, designed to resolve user concerns on the spot, provide patients with significantly improved advocacy in our military treatment facilities. That said, much remains to be done, and the men and women of the military health system are working hard to implement the additional reforms needed to keep our promise of quality health care delivery for the entire military family.

TRICARE aside, Congressional support for our people extends well beyond the health care arena. For example, pay and benefits, to include adequate housing and/or housing allowances, remain major concerns as we strive to adequately care for the men and women who daily sacrifice so much for our Nation.

I am hopeful that last year's landmark legislation will translate into a reaffirmation of Congress' and the administration's commitment to take care of our members and their families as they, in like manner, commit to a career of service to our country. This legislation should be another significant retention tool and, likewise, should form the basis for all necessary follow-on quality of life initiatives. I can not emphasize strongly enough how important it is that we do whatever is necessary today to win the battle for the hearts and souls of our very talented men and women and their families. The risk—in continued loss of combat capability and readiness

to execute the national military strategy today and in the future—is too great to accept.

FINAL THOUGHTS

Since President Reagan ordered the establishment of USTRANSCOM on 18 April 1987, the command has evolved into a truly unique joint organization with a customer focus second to none. On any given day, the USTRANSCOM team can be found providing critical strategic transportation to a host of U.S. and international agencies, from our regional CINCs to the myriad of other U.S. government agencies with global interests. No matter what the mission assigned, the customers supported, or the major world event to which America has chosen to respond, the connection I would have you make—and remember for all future events—is that if there is a U.S. response, that response is borne on the shoulders of the men and women who operate the air, land, and sea components of USTRANSCOM. There are not many headlines for what they do. In fact, we call them this country's "quiet heroes." These dedicated transportation warriors stand ready every day to professionally execute their global mobility mission—and in so doing, to successfully enable our national military strategy.

While ready to perform any mission assigned today, we remain focused on, and committed to, preparing for the future. Accordingly, our focus is on the readiness of our people, our processes, our systems, our infrastructure, and our partnerships with industry.

I am extremely proud of today's USTRANSCOM "Total Force Team" of civilians, active duty, Guard, Reserve, and industry partners. It is an honor for me to lead the highly professional members of USTRANSCOM and its Service components who comprise our National Defense Transportation team. I look forward to the future and remain confident that USTRANSCOM will continue to provide the most effective and responsive strategic mobility capability in the world.

Senator SESSIONS. Very good. Thank you, General Robertson. Desert Storm and Desert Shield mark the first time in U.S. history the military had a single command to coordinate the strategic air- and sea-lift during a major military operation. During that operation, the Transportation Command lifted the equivalent of two Army Corps, two Marine Corps Divisions, and 28 Air Force tactical fighter squadrons into Southwest Asia. It was a remarkable thing. As I recall, it was about 6 months before, we felt we were sufficiently positioned to commence hostilities. I had occasion to talk to a former higher officer in the Military Transportation Management Command (MTMC) in the mid 1990s, and he told me he did not think it could be done at that time in the same amount of time. In fact, he thought it would take longer.

Now, I know a lot of ships have been brought on line, but the total number of sealift ships are going down. My question to you is first of all, would you compare the strategic sealift and airlift capabilities of Desert Storm to today's capabilities and those that are projected for 2005?

General ROBERTSON. I will, sir. If I could, I would like to make one point about the difference in the United States Transportation Command before Desert Storm, as opposed to since.

Senator SESSIONS. Please give us your observations on that.

General ROBERTSON. It slightly changes the complexion of the picture. When the Transportation Command was formed, it was the result, as many things are, of a negotiation between those who wanted it and those who did not. The result was a middle ground solution which basically said that USTRANSCOM was responsible for the movement of the Department of Defense forces and materiel in time of war, not in time of peace.

Therefore, when General H.T. Johnson, my predecessor, who was the CINC in Desert Storm, had to take on that mission, he had not

practiced it in peacetime the way he would have to do it in wartime. We stumbled a little bit in Desert Shield/Desert Storm, if you go back and read the history. Yet we learned from that lesson and as a result, my predecessor went back to the Secretary of Defense, who, in turn went back to Congress to revise the charter to make USTRANSCOM the responsible agent for the movement of the Department of Defense in time of peace and in time of war.

When I talk to the warfighting CINCs, the first thing I tell them is to know what I will do for you in wartime, you just have to observe what I do in peacetime, and if you do not like the way I do it in peacetime, you better correct me to 100 percent because I am going to do the same thing for you in wartime. I have set up my systems to operate in peacetime just as they will operate in wartime.

Now, to get to your specific question. We learned a lot of lessons out of Desert Shield/Desert Storm. We characterized the Defense Transportation System as a strategic triad of prepositioning ships that are out stationed around the world on a continuing basis, a surge sealift fleet which we use to move rapidly from the continental United States and other points around the world to the areas of operation, and the strategic airlift fleet, which is the fastest, quickest way to move troops and forces to the theater.

If I take each one of those individually and compare them to the way we moved that mountain of men and equipment in Desert Shield and Desert Storm, you can see that from 1992 when the war ended, to the studies that came after Desert Storm to today, we have increased our capability to move the force from a sealift perspective from 53 percent to 135 percent.

Senator SESSIONS. I do not want to interrupt you, but we have gone down in total ships during this period of time.

General ROBERTSON. Yes, sir.

Senator SESSIONS. Substantially. Over 500.

General ROBERTSON. Yes, sir.

Senator SESSIONS. How do we increase our airlift and sealift capability while we have seen this decline in numbers?

General ROBERTSON. We have bought faster and much more capable ships. We have increased the capability of the ships we own and maintain. The Ready Reserve Force in Desert Shield/Desert Storm when we activated that fleet, was only 25 percent successful activating on time. A lesson learned from Desert Storm is we implemented in conjunction with the Navy and the Maritime Administration (MARAD) a no-notice activation program for the Ready Reserve Force. Since that time, we have been 99 percent successful in activating those ships; 133 of 135 no-notice activations on time or early. The two that were late were less than 10 hours total late; so the Ready Reserve Force is phenomenally better than it was. Our shipping fleet is newer, faster, more modern, and much more capable than it was, and we have significantly expanded, probably by a third, the size of the prepositioning fleet which is also newer, more capable, and more modern.

On the airlift side, if you take 1996 as a baseline where we had the capability to move about 48 million ton-miles a day, as a result of the tradeoff between the C-141 retiring and the C-17 coming online, we are down to about a 44.5 million ton-miles a day capabil-

ity. We are down some from our 1996 peak. Now, that is going to improve as the C-17 continues to come on line with its increased capability, but the new requirement, as you mentioned, in the Mobility Requirement Study of 2005, is about 54.5 million ton-miles a day. Currently, we are nearly 10 million ton-miles a day short of that. Even if we get everything that is in the current budget, we will still be over 5 million ton-miles a day short.

If you look at it from a sealift perspective, we are much better than we were in Desert Storm. We think we will be able to close the force not even in the same time but faster. From an airlift perspective, we have a ways to go to be able to meet the capability we achieved in Desert Shield and Desert Storm.

That said, we also would not have to move as much now, as in Desert Storm, because our in-transit visibility capabilities have increased significantly. The mountain of containers that never got opened in the desert after Desert Storm are not required any more because we know better what we are moving and where it is. Our procedures and processes with our customers have significantly improved. We are definitely a better transportation system than we were in Desert Storm. However, in sum, it is the airlift side, the strategic airlift side, that I worry the most about.

Senator SESSIONS. Senator Kennedy.

Senator KENNEDY. Thank you, Mr. Chairman. General Robertson, the companion effort to the Mobility Requirement Study, MRS-05, had been the airlift oversize and outsize analysis of alternatives. We have been awaiting the delivery of that study, but nothing has arrived yet. I called Secretary Rumsfeld earlier today to ask about the status of the study and urged him to release it expeditiously. The Secretary did not have any specific information immediately available to him on the status of the study, but he said he would get back to us. Could you give us any information on the status of the study?

General ROBERTSON. The study is done. We have finished dotting the last I and crossing the last T with our masters in OSD, and I think that, probably as the Strategic Review is wrapped up and vetted in OSD, the Analysis of Alternatives (AoA) will soon be releasable. I talked to the Secretary yesterday and did not address that specific question, but I do not think that there is any reason why it will not be releasable soon.

That said, I will tell you what it says.

Senator KENNEDY. That is even better.

General ROBERTSON. Basically, what the Analysis of Alternatives looked at was the delta that I just mentioned between the strategic airlift requirement and what we have today. For example, it looked at the strategic airlift movement requirement for the national strategy or for the one-MTW part of the national strategy and tried to assess what the best-value solution was to closing that gap.

There are really only two airplanes that are capable of filling the strategic oversize/outsize requirement we look at, and those are the C-17 and the C-5. With the requirement to close a gap of 10 million ton-miles a day, the solutions, well, the problems are obvious. The first problem is we have been laboring with the C-5 for many years. It does not meet the requirements of the air crews, the Air Force, or the Department of Defense because of its reliability and

maintainability problems. One of the solutions to our shortfall is to fix the C-5 once and for all, and we think it is definitely fixable.

The other side of the problem is, even if we fixed 126 C-5s and brought their reliability up to that promised by the programs that we have offered, the Reliability Enhancement and Re-engining Program (RERP) and the Avionics Modernization Programs (AMP) on the C-5 would not close the airlift gap. We still need to procure more C-17s to bring us up to the capability required, 54.5 million ton-miles a day.

Our proposal to the Secretary of Defense was that we re-engine the C-5, the Reliability Enhancement and Re-engining Program, complete the Avionics Modernization Program on the C-5 and effectively close out the challenges that are well documented with the C-5's reliability and maintainability, and then, procure C-17s up to the number that we need to meet the MRS-05 requirements.

Here is what we proposed on the C-5. There are a host of people in the Department of Defense who do not think the C-5 can be fixed. That its reliability problems are so significant that no matter what we do to the systems on the C-5, we can not bring it up to a level that is acceptable. Our proposal suggests that the best way to approach the C-5, when you have 76 of the 126 that are C-5A models and that are 35 years old, and you have 50 of them that are C-5B models that are only 12 years old and are already more reliable than the A models, that we produce a success story first. We produce a success story by beginning with the newer airplanes, the ones that are equipped with air defensive systems, the ones that fly the most on a day-to-day basis, and then we go back to re-engine the A models afterwards; after we have convinced the naysayers that this re-engining program will yield the results that it suggests.

That will give a future CINC the opportunity, if the modifications meet our expectations or if the naysayers are correct, to make a much more informed decision about what to do with the A models, which by then will be approaching 40 years old, as to whether the re-engining should be pursued or whether we should continue to buy C-17s. That is basically what the Analysis of Alternatives recommended, sir.

Senator KENNEDY. Was that the recommendation of the Institute for Defense Analyses (IDA)?

General ROBERTSON. IDA, I think, just recommended that we re-engine the C-5s and did not come up with a specific flow pattern.

Senator KENNEDY. What was their rationale?

General ROBERTSON. Sir, they concurred with everything that the contractor came up with as far as the recommendation was concerned, the effectiveness of the modifications proposed, and the subsystems chosen to be modified. They came within a percent or 2 of what the contractor said he could come up with as far as the question of reliability. As far as mission capable rate. As I recall, they did not propose a particular sequence or number of airplanes to be modified.

Senator KENNEDY. What is the difference in the cost between the alternatives that you are looking at? I had heard from the studies as you described it, that the report had talked about the re-engining of the C-5A, and you have given us at least what the Air

Force desires as its best judgment as the way to meet the requirement. What is the difference? What's the spread just in terms of resources?

General ROBERTSON. The re-engining of the C-5 is the most cost-effective solution to closing the gap on a million ton-miles per day basis. Basically, we project it will cost around \$48 million a copy to re-engine the C-5. A new C-17 would cost you somewhere in the vicinity of \$150 million to \$175 million, depending on the terms of a new multi-year contract, which is why we recommend both solutions. We have to re-engine the C-5 and we have to continue to buy C-17s.

Senator KENNEDY. May I just continue for a minute, Mr. Chairman, on this subject matter?

Senator SESSIONS. Sure.

Senator KENNEDY. Just on the difference between the C-5As and C-5Bs. As I understand, your prepared statement says that you have taken to the practice of assigning more than one C-5 aircraft to the core mission in order to ensure the mission is completed. Currently low reliability of C-5As and C-5Bs would cause you to do this. Is that correct?

General ROBERTSON. That's correct, sir.

Senator KENNEDY. There is a C-5 Avionics Modernization Program and a C-5 Reliability Enhancement and Re-Engining program. Would these solve most of those reliability concerns?

General ROBERTSON. It is my assertion that they will, sir.

Senator KENNEDY. If these programs replaced current engines with newer commercial engines and upgraded the components, landing gear, electrical, hydraulic and fuel systems, etc., it would result in a much improved mission capable rate. Would we get an effective increase in the number of aircraft that the C-5 reliability would be improved to the point that we assign one aircraft to one mission?

General ROBERTSON. Absolutely, sir. To put what I put in my statement into context, what we are talking about here is covering very important missions in a peacetime environment. If we were in a war, obviously we could only spare one airplane per mission. But you are absolutely correct, sir. If we could bring the mission capable rate on the C-5 from its 59 to 60 percent level up to the projected 75 percent mission capable rate, obviously we would have far more airplanes available on a day-to-day basis than we have today.

Senator KENNEDY. If I, just on this area, could complete, Mr. Chairman. General Robertson, this subcommittee has been very interested in the C-5 Avionics Modernization Program and the C-5 Reliability Enhancement and Re-engining Program (RERP). These programs, in combination, would solve most reliability concerns about the C-5 fleet that you mentioned in your testimony. Although the Air Force intends to modernize the avionics on all C-5s, the picture is less clear with regards to the RERP program. Last year the Air Force proposed to start the RERP engineering and manufacturing development on C-5B aircraft, but postponed the work on the C-5A model aircraft. One of the arguments of this approach used is that the C-5B aircraft has defensive systems and therefore could be used in more areas of concern.

Given the current shortage of aircraft capability and the additional deployment flexibility that defensive upgrades would provide, why isn't the Air Force more aggressive in upgrading the C-5A aircraft with effective defensive systems? It seems that these planes are such a large target in a world of enormous uncertainty, particularly in these third world situations. Why wouldn't we want to do that in any event?

General ROBERTSON. Sir, we do. Force protection, if you rank force protection and defensive systems on our aircraft in the priority list that I rank my concerns, the force protection of the aircraft is number three. It is sort of an apples and oranges dilemma, because there is a personnel concern and an overall strategic concern. We should modify the aircraft, but then it becomes a matter of dollars and cents, versus priorities and relative risk, as it is with so many things.

Right now, we do not even have the right system to put on a C-5 to properly protect it as a large, slow moving, fairly predictable airplane against the proliferation of shoulder-fired, surface-to-air missiles around the world. We are working on that system today. The system we need is expensive. That is the problem. It is an expensive system that we think we are going to need, and we have to field it, test it, and then come back and retrofit the airplanes. I am not sure that it would be worth the money today, although I could be proved wrong tomorrow if we have an accident or incident, to put a partial or an older system on an airplane that only offers 10 to 15 percent ability to protect the airplane against the threat that it is going to face tomorrow, or even today.

Senator KENNEDY. If you upgrade one and not upgrade the other, what does that do in terms of maintenance, to have two entirely different kinds of planes? Does that not cost extra maintenance funds?

General ROBERTSON. Yes, sir. Absolutely, again, you hit the point that I would hit on KC-135s, and C-130s, as well as on C-5s. Commonality of the fleet is absolutely, critically, important to maintenance in the field today. That is why I would propose to re-engine the whole fleet once we prove that it will work on the C-5B, because we want the fleet to be as homogeneous as possible across the board. As we field each new block of C-17s, we are going back, to avoid the mistakes that were made in the past on other aircraft, and retrofitting all of the previous C-17s so that when we get to the final C-17, they are all the same.

As another example, the C-130X program is an attempt to take 20 different models of C-130s and modify them into a standard C-130X configuration. So yes, sir. You will not hear any disagreement from me that we ought to standardize the fleet.

Senator KENNEDY. Thank you. Thank you, Mr. Chairman. Thank you for the help on responding to questions. Others can say well, it has not been released yet and when it is released I will comment on it. It is very helpful to get your insights on it and we want to try, and I am sure the Secretary would respond, to have as much subcommittee information prior to the markup as we can available to the subcommittee. Your responses have been enormously helpful and valuable to the subcommittee. I am very grateful to you.

General ROBERTSON. Thank you, sir. Regarding the overall gist of the questions, sir, the sooner we get on with modifying the C-5s, the better off we will all be.

Senator SESSIONS. Thank you, Senator Kennedy. That was an important part of a decision that I think we will have to be making as to how we are going to deal with the C-5A. We now have Senator Collins and Senator Smith who have joined us. Thank you, I will recognize Senator Collins.

Senator COLLINS. Thank you very much, Mr. Chairman. General, I apologize that I was not present to hear your testimony. In your written statement you said that even with the currently approved C-17 multiyear procurement program, we will still fall approximately 10 percent short of being able to meet our operational war plan. Similarly, the General Accounting Office (GAO), in a report in June, estimated that the DOD is 29 percent short of being able to meet its established military aircraft requirements, and nearly 19 percent short of being able to meet the established air refueling requirements. First, let me ask you whether your findings are consistent with GAO's.

General ROBERTSON. Let me say in this case that I am delighted that the GAO and I agree. I say that in jest. They measure it a little bit differently than we measure it. In basic answer to your question, we generally agree that there is a shortfall that needs to be addressed, and the only difference we have is over what the baseline is.

Senator COLLINS. In that regard, would a more aggressive airlift modernization program call upon us to authorize the purchasing of more C-17s than is currently planned under the multiyear procurement now underway?

General ROBERTSON. My short answer is yes, ma'am.

Senator COLLINS. Do you have a specific number in mind on how many C-17s would be necessary to fulfill the current requirements?

General ROBERTSON. Yes, ma'am, I do. I would say for starters the number is 50 to 60 more. If you are using the original multiyear procurement of 120 aircraft as your baseline, and based on our assumption on how the C-5 re-engining program is going to proceed, we think we need 50 to 60 more C-17s to meet the requirement. That number may change slightly, depending on this initiative that you probably read about—commercial C-17s. If that proceeds, the military requirement will adjust downward slightly.

It may change slightly if we decide that we are not going to do a complete re-engining of the C-5 plane 5 or 10 years from now and instead choose to start replacing C-5s with C-17s, and in that case we would want more. In that regard, I'd say come back two CINCs from now and ask the question and we will have a better answer. What I have tried to do is posture my successors with a program that we need to begin now, as you suggest, then be able to make a couple of "branch and sequel" decisions in 5, 6, or 8 years as to which direction we go based on the new requirement, based on DOD's new transformation initiatives on the evolution of the Air Force's new expeditionary concept, on the new requirement based on whatever new national military strategy we might have, and the adjusted requirement based on what happens with the C-5 re-engining program.

Senator COLLINS. I want to follow up on your reference to the possible marketing of the C-17 aircraft to civilian carriers. It is my understanding that the Air Force is considering lending assistance to Boeing in marketing the C-17. Is that accurate?

General ROBERTSON. Lending assistance? It is probably best said that we are partnering with Boeing to try to find a viable commercial provider who can pursue the commercial oversize/outsize market and place those aircraft in the Civil Reserve Airfleet (CRAF) for my use whenever I want. What that really does is allow the Air Force and Department of Defense to have these aircraft available to us at a greatly reduced cost.

Senator COLLINS. It would drop, I would assume, the unit costs significantly?

General ROBERTSON. Well, we would presume that this commercial provider would pay the bulk of the cost of the aircraft. In the end, on a day-to-day basis, we would save on the operation and maintenance of the aircraft from the market that our commercial provider would develop in this commercial world. So yes, ma'am.

Senator COLLINS. What is the status of that proposal? What do you see as the pros and cons of pursuing the proposal?

General ROBERTSON. The obvious pro is the lower unit cost. I do not know of any cons. I am open to suggestions, but in my view, it is a "win/win" for the Department of Defense to be able to have a C-17 available in a Civil Reserve Air Fleet, like we have 747s and 767s, on a daily basis at a fraction of the cost. In my view, that is the most significant pro, and I do not see any cons.

I must also say that this is not an easy thing to do. This is something that we have never tried before as the Department of Defense. There are only a couple of commercial providers who are interested. Boeing and Headquarters Air Force are in talks with these folks to see whether they think they can develop the market or not. We do not want to go out and establish a relationship with someone who does not have the credentials to do that, an excellent marketing plan, and proven operations as part of the Civil Reserve Air Fleet. We are all proceeding very carefully.

Our next step, though, is to work with the State Department to make sure that we can satisfy their concerns that this capability will not be used to benefit a foreign entity, and that this would be a U.S.-owned, U.S.-operated aircraft in accordance with the rules of the Civil Reserve Air Fleet. That said, we have not met any resistance from the State Department, from the FAA, who will have to certify this as a civilian commercial airplane, as opposed to a military airplane, or from the Defense Threat Reduction Agency.

We may end up having to disable some militarily unique systems. There will be no problem with that, as far as we can see. Basically, in the end, as you work your way through all of these wickets that we are finding as we go, we think it will be a "win/win" situation if we can find a contractor who is viable enough to turn this commercial oversize/outsize market into something profitable for himself.

Senator COLLINS. Thank you. Thank you, Mr. Chairman.

Senator SESSIONS. Senator Carnahan.

Senator CARNAHAN. Thank you, Mr. Chairman. I certainly want to welcome General Robertson here today. I want to express my ap-

preciation for the exceptional performance of the Transportation Command which you so diligently head. Since the Berlin Airlift drove a wedge through the Iron Curtain, the United States has recognized the value of strategic mobilization in peacetime, as well as in war. By the end of that operation, American and British pilots had flown 92 million miles to deliver nearly 2.3 million tons of food and supplies to Germany and Berlin.

The role of airlift in military operations has only increased since that time. For that reason today, I wish to focus my remarks on the work of the Air Mobility Command. Over the last 5 years, the Department of Defense has begun to identify necessary changes in strategic airlift requirements. In addition to meeting the demands of the two Major Theater War strategy, the United States military has faced the challenges of small scale conflicts, peacekeeping operations, and terrorist attacks. The Mobility Requirements Study 2005 takes these developments into consideration, and from what my colleagues and I can see, this document shows that our current airlift capacity cannot meet our strategic needs.

According to the Department of Defense, the Air Mobility Command must increase its ability to transport personnel and heavy equipment by almost 10 percent. To implement this recommendation, the Air Force would have to procure a total of 180 C-17 Globemaster aircraft or increase the airlift capacity through other means—that is, 60 more C-17s than what is currently planned. In light of this report, it seems that the most recent defense budget proposal does not devote sufficient funding to correct our deficiency in strategic airlift.

The report also notes that we are beginning to change the way we plan our military strategy. Throughout the last decade, our forces have engaged in disaster relief and humanitarian assistance and small, fast-paced missions throughout the world. Currently we must devote most of our resources to preparing for a Gulf War scenario. It is time for us, I believe, to examine our ability to respond to terrorism and to weapons of mass destruction and small scale conflicts. Let me conclude by revising an old military adage. Napoleon Bonaparte once said, "An Army travels on its stomach." But today I suggest that the Army also travels on wheels, and on wings, and on waves. To meet our mobilization needs we must take heed of that and raise our airlift capabilities as well. Thank you. I will look forward to hearing your testimony.

General ROBERTSON. Thank you very much, ma'am. I agree 100 percent.

Senator SESSIONS. Senator Smith.

Senator SMITH. Thank you, Mr. Chairman. I would like to probe a little deeper on Senator Collins' points about dual-use. I think that is the best way we can put it.

Given the circumstances right now where we have procurement problems, especially in airlift and sealift, a lot of our equipment is reaching the end of its lifespan. Are you advocating something like the C-17 proposal, where the commercial vendor would purchase those aircraft off the military line at a reduced rate, or whatever the rate might be for the U.S. government cost, and then have that fleet available in the barn for lease in a time of need for the United States military? When I say, are you advocating, you are advocat-

ing that as opposed to pressing forward to purchasing more C-17s outright? I would like to know where you are coming from on that.

General ROBERTSON. Until you got to the end, I agreed, sir. I support exploring the possibility of it.

Senator SMITH. You prefer to own, and if that is not an option?

General ROBERTSON. To be perfectly honest, on a peacetime basis, it is like the Civil Reserve Air Fleet. If I owned all the aircraft in the Civil Reserve Air Fleet, almost 400 airplanes, I couldn't use them on a peacetime basis. They would sit on the ramp or I would expend a lot of money keeping their associated air crews trained, not having enough flying cargo from paying customers to absorb a portion of that cost. Mine is both a business as well as a military profession. I get paid for the cargo I move for my military and other U.S. government customers.

It would be the same way with the commercial C-17s that we are proposing. On a day-to-day basis, I may or may not need them. However, my strategic airlift fleet today at 70 C-17s, is stretched very thin. When we get to 120 C-17s, we will still be stretched because all the C-141s will be long gone. When you get to 170 C-17s on a day-to-day basis, depending on what direction the world goes and what direction the national strategy goes, I may not be able to use every one of them. Like the Civil Reserve Air Fleet, I would have no problem with the same airplanes being over there in the commercial fleet on call, that I do not have to pay for.

Senator SMITH. It was not meant to be a hostile question. It was meant to be one of support. It sounds good to me. In the best case, we own them all and we have them at our disposal. Yet given the circumstances and the ground that we have to cover in terms of our readiness, it seems to me that this is one way that we might be able to do it, in airlift. Where as long as, I think you said this, there is a vendor that has the capacity to purchase those aircraft, and as long as they would be available, at least in some situation. You never need them until you need them.

Let me say that this is not unprecedented. With the National Defense Features Program for the Navy, did we not have a similar situation there?

General ROBERTSON. Exactly.

Senator SMITH. We can probably do the same thing with some of the commercial ship tankers, as a former handyman aboard a tanker. It would seem to me that we could fit commercial tankers to military usage if we needed to, to avoid the kind of situation that happened in the Gulf awhile back.

General ROBERTSON. You will not get any arguments from me. I am a strong supporter of the National Defense Features Program. I did not want anyone to walk away thinking it is an either/or situation. I need more C-17s.

Senator SMITH. I understand. I hear you and you made that very clear. I commend you for saying that. I think it is obvious Congress and the Executive Branch would have to make that decision. You have been very candid here and given the fact that we do have a lot of ground to make up, it is an option that I think the Senate, the House, and the President ought to consider. I think it is good that Senator Collins brought it up.

One other question, Mr. Chairman. On the KC-135 tanker, which is also getting up there in years, although we have been saying that about the B-52 and that keeps flying though twice as old as its pilots now. As far as that tanker fleet, in terms of refueling capability—

Senator SESSIONS. That is the KC-135 air tanker.

Senator SMITH. Yes. Right. KC-135E. If we re-engine that program, does that help bridge the gap of those aircraft?

General ROBERTSON. The remaining KC-135s, yes, sir, it would. In that regard, there is another study that has not been released yet; well, two studies. The KC-135 is approaching 40 years old. Current Air Force projections are that it will be around until it is 80 years old, at least the last one until it is 80 years old.

Out of concern over the rising amount of time that these aircraft are spending in depot being fixed, the rising costs of spare parts on an airplane that was produced 40 years ago—I flew in a B-52—it was older than me then, so I know what you are talking about.

Senator SMITH. A great aircraft.

General ROBERTSON. Yes, sir. Well, regarding the KC-135, we did a Tanker Requirement Study and we did a KC-135 Extended Service Life Study. These are working their way through the approval process now. Basically, we said okay, based on what we know of the national strategy in the future, how many tankers will we need and, bottom line, we think we need about as many as we have today, or at least as much capability, from a “boom” perspective, to refuel 5 years from now the airlifters and bombers of all services that are expected to be employable, at that time, in support of the national strategy.

Then we said, “Well, how long will the KC-135 last?” We went to the engineers, did another study, and basically they concurred with our original assessment that the KC-135 will last at least 20, 30, 40 more years. Also, if you look at the reliability of the KC-135 today, operating at about a 95 percent departure reliability rate, I have a hard time saying replace it today, even though it is already 40 years old.

At the same time, the amount of time required for maintenance is growing and the costs per flying hour is growing, and so we do have to pay attention to the KC-135.

Senator SMITH. So re-engining them is an option?

General ROBERTSON. We have about 100 that have not been re-engined. When we talked about commonality earlier, re-engining the remaining KC-135s is another example of commonality of the fleet that will help the maintenance force.

Senator SESSIONS. Thank you, Senator Smith. We appreciate your service as Chairman of this Subcommittee.

Senator SMITH. I do not think I chaired this, Senator Snowe did.

Senator SESSIONS. I thought you had this job previously.

With regard to the C-5, if they are re-engined, do you have an opinion about the life of the C-5?

General ROBERTSON. Sir, the engineers project and I basically agree with them that the C-5 will last at least another 40 years.

Senator SESSIONS. Does it have any special capabilities that make it preferable or, or that make it have advantages over the C-17? Maybe you can explain its unique capabilities.

General ROBERTSON. There are a few things that the C-5 can carry that a C-17 cannot. Not very many, but there are a couple. The real benefit of the C-5 is it carries almost twice as much as the C-17. It closes the gap twice as fast as the C-17 when you are talking about closing the force. That said, it takes up a lot more ramp space and does not turn as fast as the C-17. However, it is a tremendously huge box in which to carry Army, Marine, Navy, Air Force equipment.

Senator SESSIONS. So your view is that we spend \$48 million to \$50 million to refurbish the C-5?

General ROBERTSON. About \$48 million.

Senator SESSIONS. As opposed to \$150 million to \$70 million for the C-17. Is that a good economic investment for another 40 years of life?

General ROBERTSON. Not instead of, but in addition to.

Senator SESSIONS. I know the numbers may not be hard now, but for Senator Smith's question, how many more than the 120 projected C-17s is it your best judgment that you will need?

General ROBERTSON. If we re-engine the C-5 and if we get the mission capability rate increase that we project, then we will need 50 to 60 more C-17s.

Senator SESSIONS. You would like to have 10 more in the civil reserve fleet?

General ROBERTSON. That is the difference between 50 and 60.

Senator SMITH. Fifty and 60 in what time period?

General ROBERTSON. We would like to begin a multiyear now. The current C-17 multiyear is winding down. We would like to begin another multiyear this year to carry on the buy of 15 per year, so probably fiscal year 2008 is where that buy will stretch out to.

Senator SESSIONS. In the Mobility Requirement Study 2005, in determining our strategic airlift and sealift capabilities, having lived with these issues and being responsible for them, are you concerned that there may be shortcomings in the assumptions or parameters that were utilized to draw these goals and requirements?

If you would, would you share with us any concerns you might have about that study and—just how much this subcommittee should rely on it and what we should be thinking about in that process.

General ROBERTSON. When the study began a little over 2 years ago—that is how long it has taken us to push this study through to its conclusion—the assumptions for the study were developed by a small group into which I did not have entry. As the study progressed, I thought that we would work our way through those assumptions, some of which I did not necessarily agree with. As the study came to about its midpoint, it was developing a conclusion that I did not think the military could live with, and so I raised an objection to those assumptions.

When the final study came out, as you probably read in the executive summary, the range of alternative capabilities required is from 51.1 million ton-miles a day to 67 million ton-miles a day. The Chairman had talked with the service chiefs and CINCs and settled on a requirement of 54.5, which is somewhere in the range between those two.

The assumptions are complicated and technical, but, basically, the study assumed that we would get almost instant response to a presidential recall, to recall the force faster than I thought was possible given the political environment that existed around the last two presidential recalls.

Senator SESSIONS. It is not the personnel responding, but their equipment responding. Is that correct?

General ROBERTSON. Sir, it is the decision process. It is the actual making of the decision to recall units and/or personnel from the reserve, and what will happen in the fog of war to slow down that decision. Since I need them early, according to the study, and because time is critical to the CINC who's engaged in a shooting war, airlift becomes the only solution to close that speed or close that gap.

That is the period of time that we have lost. In the same way, it is the decision to activate the Civil Reserve Air Fleet and the decision to activate the Voluntary Intermodal Sealift Agreement. Every day that you lose is a day that you are not closing the force, and to make up that time difference, airlift then becomes the only solution.

It was the assumption that said we would move nothing else during the time of a conflict except that which was going to the war-fighting CINC. In other words, I would not be able to move the President; I would not be able to move any member of Congress who chose to travel around the world; I would not be able to move the Secretary of State or Secretary of Defense who would negotiate the cease fire agreement. I could only move the force. I would not be able to support any other CINC, just that single engaged CINC. Therefore, I did not think that was a realistic assumption.

Based on a two Major Theater War (MTW) concept, the assumption took a significant portion of the airlift force, even before I finished moving the equipment and personnel required by the first CINC and swung it to the second CINC. I did not think that that first CINC would be all that eager to let his air flow stop before I had closed his force. It was those kinds of assumptions that troubled me.

Senator SESSIONS. You would have to provide some support, right?

General ROBERTSON. Exactly. Yes, sir.

Senator SESSIONS. The assumption was it all would be——

General ROBERTSON. It basically assumed no weather, no aircraft problems, and no losses of airplanes. I was concerned that those might not be realistic assumptions in a time of war.

Senator SESSIONS. When you came out with the 51 and 67, the CINCs and everybody agreed on 54.5 million tons.

General ROBERTSON. A million ton-miles per day.

Senator SESSIONS. Per day. Is that realistic or not?

General ROBERTSON. 54.5 will allow me to close the CINC's force and allow me to do about three other, what we call concurrent missions at the same time, of the array of missions that I would not be able to do. The Chairman, the Chiefs, and the CINCs decided that that was acceptable from a risk standpoint to be able to make that recommendation.

We are measuring risk, that is what we are doing. What is the risk to the troops on the ground, who are fighting the war, and of me being able to close his reinforcements before he dies? The assessment of the Chairman and the CINCs was that if I had 54.5 million ton-miles, that would yield a medium risk war plan and that was acceptable.

Senator SESSIONS. Senator Carnahan.

Senator CARNAHAN. Just one question. According to recent mobility studies, increasing dependence on the civil reserve fleet would not greatly enhance our airlift capability. Do you believe that civilian purchases of C-17s will make the air fleet more valuable in meeting our airlift requirements?

General ROBERTSON. If we could use more of the day-to-day commercial Civil Reserve Air Fleet, we would. We already give them a significant amount of credit for moving their portion of the required 54.5 million ton-miles a day. About 20.5 million ton-miles a day would be moved commercially.

The problem is, there are certain things that only the C-5 and C-17 can move. In addition, when we put a volume of commercial aircraft into a theater in response to a conflict, they take a long time to unload and they take up a lot of space on the ramp. As a result, we have problems with saturation that a C-17 or a C-5 that are basically drive-on, drive-off, does not create.

Therefore, we take the "how much" and the "what" of what we carry, and take the turn time that different aircraft require on the ground, and we put it all into a giant gray computer that says you cannot use any more civilian capability due to ramp congestion. However, a C-17 in the commercial fleet is still a C-17. It can still back up. It can still turn around on a dime. It can still use "drive-on" and "drive-off" ramp, it can still land on a short field and do all the things that a military C-17 can do and, therefore, it is still contributing to the overall oversize airlift effort. A good question. Thank you, ma'am.

Senator SESSIONS. Senator Smith.

Senator SMITH. I am done.

Senator SESSIONS. I want to run a few matters by you, General Robertson. Maybe you can enhance the answers in writing later on. Two weeks ago I visited two mine warfare ships in the Persian Gulf. In your written statement, you indicated that you have a continuing concern for the shortage of heavy lift vessels required to deliver small floating craft such as mine warfare vessels. What is your assessment of the warfighting impact of the efficiency and heavy lift ships and what solution do you see for that?

General ROBERTSON. The ability to move Coast Guard cutters, mine counter-warfare ships, and small Army ships is a significant problem for the warfighting CINC and it is one that we have not resolved. We need to preposition them, but there aren't enough assets to do that on a day-to-day basis. Another option would be to have a float-on/float-off (FLO/FLO) capability or lift-on/lift-off (LO/LO) capability to put three or four of these on a boat and move them rapidly in response to a crisis.

The Navy is looking at what the solution to that is. It was re-amplified as a concern in our new Mobility Requirement Study (MRS-05). I am confident that within the upcoming months, within

the next year, the Navy will fix on what the correct solution to that problem is. It may be something as simple as leasing a FLO/FLO or LO/LO ship, and keeping it in the Ready Reserve Force or something like that.

Senator SESSIONS. If you had a ship like that in the Ready Reserve Force, you have to negotiate with the ship and reach a contract that you can take priority over their time at any point and have to pay them on that?

General ROBERTSON. Yes, sir.

Senator SESSIONS. Is it cheaper than operating on a daily basis?

General ROBERTSON. I do not know the answer, sir. I really do not know the cost/benefit analysis. I do not know that it has even been done, but we have to be able to give you and give ourselves the most cost effective answer to that question. It is a problem we have to solve.

Senator SESSIONS. When you look at the fleet that we are operating, it certainly does not strike me that—the sense of which we can get virtually as good service with the reserve fleet, then that is an option we have to give consideration to.

General ROBERTSON. Yes, sir.

Senator SESSIONS. The Army's transformation to a lighter, more mobile, more lethal force and the desire to be able to field a brigade in combat anywhere in the world in a timely fashion is extremely important. Has the command conducted any analysis to determine whether or not you can support the movement timelines the Army has established for this?

General ROBERTSON. We have done some rough analysis, sir. I am not sure it is something I would want to hang my hat on, but basically the first requirement of the Army, is to move the Interim Brigade Combat Team (IBCT) in 96 hours. If we stretch, we can meet it, if we do not do anything else in the world with our current airlift. That is another reason why we need to make sure we enhance our airlift fleet. We are working hand-in-glove—

Senator SESSIONS. That is based on current capability?

General ROBERTSON. Yes, sir.

Senator SESSIONS. But if you had the enhanced C-5 and new C-17s—

General ROBERTSON. Yes, sir. It is more than just aircraft. Aircraft is a big part of the issue. It is also a question of infrastructure, because it is a matter of how fast it takes you to move from Fort Lewis to McChord to load the C-17s, and how much ramp space you have at McChord to park C-17s and C-5s. Ninety-six hours is pretty quick. So there are some infrastructure concerns that are being studied, analyzed, and categorized as well. The Army and the Air Force will have to work out those issues.

As the Army works its way towards its final solution for the transformed Army, we are working hand-in-glove with them to make sure, when we begin the next Mobility Requirement Study, that we take the Army transformation fully into account.

Senator SESSIONS. They are going far with a big program and making a big commitment to altering their way of operating.

General ROBERTSON. At every level. My Deputy Commander in Chief is an Army three-star. We have transporters on the Army staff at the General Officer level who understand what it takes to

move the Army, and we are in lockstep as they develop their requirements. We assess, give them feedback, and they alter or proceed depending on how we assess their needs and proposed alternative solution.

Senator SESSIONS. In your written statement, you indicate USTRANSCOM's support of NATO peacekeeping forces in Kosovo. What has been your experience regarding allied commitment to coalition and alliance strategic lift and airlift?

General ROBERTSON. Sir, they would like to do it. Many of our allies would like to have the capability that we have today. Unfortunately, this desire has not made it high enough up on their funding priority list. They are trying to meet, which I believe many of our NATO allies are trying to meet as well the basic requirements of NATO standardization, interoperability, yet have not gotten around to try and work the transportation piece. Therefore, they will be an AOR limited force for some time to come unless we provide that capability for them.

Now, the British have stepped out with their first C-17 acquisition, and they will provide the core of what we think is the leadership to lead them to that strategic solution that they all need.

Senator SESSIONS. Do we have any agreements with the British on that C-17 that they have purchased?

General ROBERTSON. No, sir. No specific agreements other than maintenance kinds of agreements, and simulator sharing.

Senator SESSIONS. Not use?

General ROBERTSON. No, sir.

Senator SESSIONS. You mentioned the Man Portable Air Defense Systems in your remarks that they may be the most serious threat to your strategic airlift. Would you explain that in a little more detail?

General ROBERTSON. Since the end of the Cold War, intelligence estimates have postulated that shoulder-fired SAMs, Stingers, SA-7s, and the like, have proliferated throughout the terrorist organizations of the world. It is my concern that a large aircraft, one not equipped with proper air defenses, one that would fly a fairly scheduled route, easily identifiable and carrying U.S. troops or U.S. cargo, becomes a very vulnerable target, either on takeoff or on landing from the remote places that we operate. We have some defensive systems as we discussed earlier, but those defensive systems, in my view, are not adequate to protect large, slow-moving aircraft. We need to improve our capabilities in order to operate in environments where tension suggests that those SAMs may exist.

Right now, we either do not operate or we go around those areas, which in a crisis would significantly slow the closure of the force. However, that is not something we would want to do.

Senator SESSIONS. Well, are we making sufficient headway toward creating and implementing a defense system?

General ROBERTSON. We are making progress. Obviously, every time you come up with a question like this, the answer becomes one of how much money you can invest. This is a technology that is available, but it is leading edge technology, which means it is expensive technology. The Air Force is proceeding, I would say "prudently," with a small subset of systems to see if they will work on

the C-17 and C-130 before we go into a larger buy to see if we can start to reduce the cost of the system.

Senator SESSIONS. Could we be more intense about that? Is that an area you would suggest that may need more funding and attention than it is receiving now?

General ROBERTSON. It will need more funding within a year or so, yes, sir. As we finish the development of a system and test it on the C-17 over the next year and decide to make a full force implementation and decision, we will decide on more funding.

Senator SESSIONS. General, I am a supporter of the Maritime Security Program (MSP). That ensures 47 active U.S.-flag and U.S. citizen crew, commercial military-use vessels are available to support the Department of Defense during a war or national emergency. In your view, has the MSP successfully provided you with additional sealift capability that meets your requirements?

General ROBERTSON. Yes, sir. I am a supporter of MSP as well. I will tell you, if you ask me, I will sing out in support of anything that increases the health and vitality of the U.S.-flag fleet and the men and women who crew that flag fleet. MSP has been a valuable contributor to the health of that fleet. There is a lot more that I could say about MSP but I will wait for your next question.

Senator SESSIONS. My next question is that congressional reauthorization for the MSP will be coming up before long. Current authorization expires in 2005. Do you agree that congressional reauthorization of this MSP is required to enable U.S.-flag vessel operators to initiate long-term vessel procurement, recapitalization, and other U.S.-flag merchant fleet development programs?

General ROBERTSON. Sir, I do, and I would probably add—although I am not the expert on MSP—that the industry is actively considering how to approach reauthorization. However, in sum, if I am asked as CINCTRANS, I would say yes, we need to get on with reauthorization and probably sooner, rather than later.

The MSP as it is currently structured, in my view, does not adequately compensate the carriers who get the MSP funding for what MSP was designed to provide. In other words, the per ship stipend I think has had its value outstripped by inflation and it needs to be adjusted.

Senator SESSIONS. Has that been a problem maintaining ships in the system?

General ROBERTSON. It has not been a problem, but it will be soon. We are trying to take the curve which is driving inflation and the other curve reflecting the value of the dollars we provide, and get additional resources before those lines cross. I would say that we are pretty close.

Senator SESSIONS. One more thing on MSP. I am a believer in free trade, but I also believe this Nation has an obligation to maintain certain infrastructure. Do you agree with the continuation of U.S. ownership and control requirements that are critical to the continued viability of the MSP and its related support for DOD, sealift, and other national security efforts?

General ROBERTSON. The answer is yes, sir. The “U.S.” in the U.S.-flag fleet and the “U.S.” in the U.S. Merchant Mariners who crew that fleet, I believe are as important to me as the CINC and to the other warfighting CINCs that I support. However, that is a

simple answer to a much more complicated question, and the way the rules are currently structured, that layer of U.S. ownership required of a U.S.-flag ship owned by non-U.S. companies is expensive to the companies who do that. It is an issue that the industry is currently discussing potential solutions to.

I cannot tell you here what the pros and cons of any particular solution to that might be. I am not even sure that there is an easy solution to it. It is something that we need to address because, in the end, just like the MSP stipend that we give to the companies for committing their ships to us, it all comes down to how much cost companies are required to assume for being a U.S.-flag ship and a member of the U.S.-flag fleet.

Senator SESSIONS. I have one more question. General, would you comment on the status of the Denton Humanitarian Cargo Program? Retired Admiral Denton is from my hometown, a former Senator from Alabama, a prisoner of war for quite a number of years, and an American hero. He is now giving of himself to develop a humanitarian cargo program by which a military and commercial craft can be utilized to move cargo to areas of the world that are in desperate need of humanitarian aid. How are we doing with that? Can you give us an update?

General ROBERTSON. Senator Denton is a hero of mine as well, both for his work as a Senator and what he did before. We are the implementors of the Denton Humanitarian Cargo Program. We have traditionally implemented the Denton/Humanitarian Cargo Program with aircraft. Last year, we sat down with Senator Denton and figured out a way to move cargo using sealift as well.

If I can insert for the record how many million pounds of humanitarian cargo we have moved free of charge under the Denton Humanitarian Cargo Movement Program, I would like to do that. Basically, what we did last year was move our Denton program office from Pope Air Force Base, North Carolina, where it was basically C-130-centered and limited, to Charleston where we have the C-17 to give us more capability to project that Denton cargo throughout the world.

[The information follows:]

Since the Denton Humanitarian Cargo Movement Program began in 1985, we have moved slightly more than 39.1 million pounds of humanitarian cargo.

It is a tremendously successful program. I have an office at U.S. Transportation Command headquarters that monitors the volume of Denton cargo available to be moved. Our goal is to keep that outstanding volume at the lowest possible level, so that we put that humanitarian cargo to the earliest possible use whenever we can move it. It is a great program, sir, and it is one we are doing our best to make Senator Denton proud of.

Senator SESSIONS. I appreciate that. I thank you for your service and for your candid and valuable testimony. It has been very helpful to us. These do represent critical questions to America's defense. All we have to do is think back to the Gulf War and how much had to be moved and the stresses that placed on us. From everything I have learned, we have replaced a lot of different things. Your leadership has been helpful in that. If there are no other questions, I thank General Robertson for his testimony. We are adjourned.

General ROBERTSON. Thank you, Mr. Chairman.
[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

1. Senator SESSIONS. Recently I visited two mine warfare ships in the Persian Gulf. Your written statement indicated that you have a "continuing concern with the shortage of heavy lift vessels required to deliver smaller floating craft" such as mine warfare vessels.

What is your assessment of the warfighting impact of the deficiency in heavy lift ships and what solutions are being pursued?

General ROBERTSON. The Mobility Requirements Study 2005 (MRS-05) identified difficulties with moving Navy mine countermeasure ships, 110-foot Coast Guard Cutters and Army watercraft. The Joint Staff has asked USTRANSCOM to conduct a study of the heavy lift need to ensure that we understand the full requirement and the impacts on the current plans and Ready Reserve Force (RRF) assets. In addition, the services are working the heavy lift issue by addressing their specific aspects of the problem:

Mine countermeasure ships. The Navy and the Maritime Administration are conducting a deck strength study to evaluate whether RRF ships can support the weight of lift-on/lift-off operations for mine countermeasure ships. Should such operations prove infeasible, the Navy will evaluate other alternative transportation modes, including commercial heavy lift sources, float-on/float-off operations and prepositioning options.

Coast Guard cutters. The Coast Guard is procuring shipping cradles that will permit the 110-foot cutters to be loaded onto selected RRF ships.

Army watercraft. Regional commanders in chief, in conjunction with the Services, are reviewing watercraft needs and, where shortfalls are identified, will revise prepositioning requirements in order to meet required delivery dates and intra-theater surface lift requirements.

COALITION AND ALLIANCE LIFT CAPABILITIES

2. Senator SESSIONS. Your written statement indicated that TRANSCOM supported the deployment of NATO peacekeeping forces in Kosovo.

What has been your experience with regarding allied commitment to coalition and alliance strategic lift and airlift?

Do coalition and alliance operations put additional requirements on your planning for sealift and airlift?

General ROBERTSON. Generally, our allies and coalition partners often have transported their forces. For that reason, USTRANSCOM's recent strategic lift of friendly forces has been limited to augmenting multilateral peacekeeping in Sierra Leone, Kosovo, and East Timor in 1999-2000. The following is a summary of recent support to our allies and partners.

On 12 May 2000, one Air Mobility Command (AMC) C-17 flew 42 short tons (STONS) of ammunition to Sierra Leone in support of the United Nations (UN) peacekeeping force. From 17 through 20 April 2000, one C-17 flew four round robin missions from Poland to Kosovo via Ramstein to deploy 130 Polish troops and 102.5 STONS for the Kosovo peacekeeping force (KFOR). This lift was undertaken at the request of the Commander in Chief of United States European Command who wanted to expedite the movement of peacekeepers into a troubled location in Kosovo after a violent incident there. Finally, from October 1999 through February 2000, AMC flew 26 airlift missions to deploy peacekeeping forces from two Asian, two South-west Asian, and one African nation to East Timor. The deployment airlift moved 3,510 passengers and 384.7 STONS. Additionally, three voyages by Military Sealift Command (MSC)-controlled ships moved 46,832 square feet of cargo and six passengers. Redeployment of one Asian contingent required eight AMC airlift missions that carried 501 passengers and 102.9 STONS along with one MSC voyage that transported four passengers and 9,846 square feet of cargo.

Two conclusions emerge from these operations. First, leadership by allies and participation by regional forces contributed to meeting the lift requirements. For example, the United Kingdom secured Freetown, Sierra Leone in May 2000, and the UN was able to deploy additional peacekeeping forces to Sierra Leone using other than U.S. airlift. AMC's deployment of Polish forces to Kosovo (mentioned above) amounted to a NATO show of force in the face of an isolated civil disturbance. KFOR was able to contain the immediate unrest and deter the need for further reinforcements. Australia assumed the initial leadership of peacekeeping forces in East Timor and

deployed its own forces. Second, sheer distance can increase the need for strategic lift. The relative proximity of West African nations to Sierra Leone enabled deployment of peacekeepers without USTRANSCOM's assistance. Since May 2000, USTRANSCOM's role has been to deploy U.S. forces to Nigeria in August and October 2000 (FOCUS RELIEF I) and to Ghana and Senegal in May 2001 (FOCUS RELIEF II) to train local forces for peacekeeping duty in Sierra Leone. Incidentally, the FOCUS RELIEF I deployment came to 13 missions which moved 320 passengers and 342 STONS with redeployment in December 2000. Last month's FOCUS RELIEF II deployment amounted to five missions carrying 224 passengers and 208 STONS. Unlike Sierra Leone, the isolated location of East Timor furthered the need for U.S. strategic lift to assist those nations willing to provide peacekeeping forces.

In response to your second question, there are no requirements in our operation plans for the U.S. military to provide airlift and sealift to coalition and alliance operations.

3. Senator SESSIONS. During my visit this month to one of our overseas commands, it was highlighted that port facilities are not always available when and where they are required. Joint Logistics-Over-the-Shore (JLOTS) is the program that is supposed to provide the means to offload the large cargo ships when no sea-port facility is available.

First, is JLOTS important; second, if so, are there JLOTS deficiencies; and third, if there are deficiencies, is there a plan to correct them?

When is the last time the JLOTS requirement was reviewed and exercised in each potential theater of operations?

What are your concerns regarding JLOTS and what are your plans to address those concerns?

General ROBERTSON. JLOTS capabilities are critical to DOD's global power projection strategy. JLOTS enables DOD to project and sustain forces worldwide in areas where seaports are unavailable, inadequate, or have been damaged or denied by enemy actions.

Current Army/Navy force structures can provide offload capability for strategic sealift ships; however, there are deficiencies. First, Army/Navy systems are not fully interoperable and cannot operate in sea state 3. Second, the lack of sufficient heavy lift sealift capability makes timely delivery of JLOTS watercraft to theaters of operations impossible.

Interoperability and sea state 3. Initiatives by the Services are in-place for fixing the problems, but funding and design technology changes will negate full fielding of sea state 3 capability by fiscal year 2005. A Joint Integrated Process Team, comprised of Army/Navy staff, oversees the sea state 3 program to field three systems to provide sea state 3 operating capability. These are 1) the Rapidly Installed Breakwater (RIB), 2) the Joint Modular Lighterage System (JMLS), and 3) the sea state 3-crane system. The RIB is an Army System. An advanced technology demonstration will put the RIB through full phased testing during the summer of 2002. No production funds are available for the RIB at this time. JMLS is a Navy system. Testing of the JMLS 8-ft. module has been halted due to safety problems and current JMLS design is not capable of conducting bare-beach operations. Navy is re-evaluating this concept and potentially will move to 24-ft. modules. Fielding may be delayed until fiscal year 2009. Once fielded, Army/Navy causeway interoperability problems will be solved. The sea state 3 crane is also a Navy system, and is on track. Initial installation will be on the Flickertail State, a Ready Reserve Force auxiliary crane ship, in the 4th quarter of fiscal year 2001. Full fielding on all crane ships by 2005 is on track.

Heavy Lift Shipping. The Department of Defense (DOD) is in danger of losing a critical sealift capability to transport, JLOTS-enabling watercraft into a theater. Current Operation Plans (OPLANS) require delivery of Army JLOTS watercraft, as well as Navy Mine Countermeasure (MCM) ships and U.S. Coast Guard 110 ft. cutters to theaters. Besides prepositioning and transoceanic self-deployment, the only other viable option for transporting watercraft is via heavy lift ships. DOD, through the Army's prepositioning program, leases one vessel, the American Cormorant, a float-on/float-off (FLO/FLO) type heavy-lift vessel capable of lifting all types of watercraft. There are 14 FLO/FLO vessels comparable to American Cormorant in the world merchant fleet-all foreign flagged. The Army lease for the American Cormorant expires in fiscal year 2002. Without this lease, American Cormorant will revert to commercial status, probably be re-flagged foreign, and removed from the DOD inventory of shipping. Loss of U.S.-flag FLO/FLO shipping capability exacerbates existing watercraft transport shortfalls, reduces DOD planner flexibility, and introduces risk of relying solely on the worldwide fleet charter market to supply FLO/FLO type heavy lift shipping capability to execute CINC OPLANS. Joint Staff/

J4, with the assistance of the United States Transportation Command (USTRANSCOM), is conducting a study on this issue to make recommendations on the best options for resolving this lift shortfall based on current validated requirements.

A comprehensive review of JLOTS requirements was last done in the 1995–1996 timeframe. The Joint Staff/J4 and Services reviewed CINC requirements, Army/Navy force structure, equipment, and capabilities. A report produced by the Joint Staff/J4 in November 1996 led to the JLOTS Master Plan which synthesized interdependent enabling technologies, training, and command and control functions to meet Service and unified command logistics over-the-shore and joint logistics over-the-shore requirements. Currently there is no plan to re-look these requirements.

Planning Guidance requires Army/Navy to conduct an annual liquid/dry cargo JLOTS exercise in conjunction with the Chairman, Joint Chiefs of Staff's Exercise Program. JLOTS was last exercised in the United States Pacific Command (USPACOM) theater in June 2001, and in the United States Central Command (USCENTCOM) theater in 1996. USTRANSCOM, as the supported and supporting CINC, executed a CONUS-based JLOTS exercise in 2000. The Chairman, Joint Chiefs of Staff promulgated a new JLOTS exercise schedule for fiscal year 2002 through 2006. This schedule exercises JLOTS in USPACOM every odd year, USCENTCOM in 2002/2006, and the United States Southern Command in 2004. To ensure an annual JLOTS exercise, unified commands are authorized to develop alternate JLOTS exercises in their theaters or in the continental United States in the event the primary exercise containing JLOTS is canceled. USTRANSCOM has worked closely with the unified commands to develop this schedule. United States European Command (USEUCOM) has elected to conduct their staff training during the USCENTCOM JLOTS exercises.

To answer your last question, my greatest concern with JLOTS is the lack of capability to deliver JLOTS force within the timelines established by the unified commands in their major theater war plans. As I noted before, Joint Staff/J4 is conducting a study to make recommendations on the best options for resolving the lift shortfall based on current validated requirements. Once this study is complete, your support may be needed to fund the recommended solution.

My last concern is that current JLOTS requirements are based on 1996 strategy and assumptions. The time may be right to review the JLOTS program. My staff will discuss this at the next JLOTS Board meeting with unified command and service representatives and request a formal review by the Joint Staff. I believe the time is right to revalidate whether sea state 3 capability will still be needed under our future mobility strategy and determine how new intra-theater assets being proposed, such as the Army's high-speed Theater Support Vessel might impact current generation of lighterage and watercraft that, constitute a portion of our heavy lift sealift requirement. We will be addressing these issues with the Joint Staff and services.

4. Senator SESSIONS. In the past, Army and Navy reservists and Army National Guard have coordinated training with Ready Reserve Force ships in port. The feedback from units involved was that the results were superb and far superior to lectures, paperwork, and training films. Unfortunately, it has been reported that this valuable training is no longer conducted for units that do not have a Ready Reserve Force ship nearby.

What initiatives can be taken to coordinate the weekend training and 2 weeks active duty training to leverage the synergistic results of real world scenarios?

General ROBERTSON. The United States Transportation Command depends on a blend of Active and Reserve Forces, as well as, government civilian employees and the commercial transportation industry. The training and synergy of all these elements are important to the proper operation of the Defense Transportation System. I can tell you the training of Reserve Forces is, and will continue to be, a priority of USTRANSCOM and its component commands. In the past 2 years, real world training opportunities have increased both for weekend drill time as well as annual training (AT). The Military Traffic Management Command's, Deployment Support Command, Readiness, Mobilization, and Reserve Affairs Office schedules annual training and other training opportunities for Reserve units based on operational requirements at Military and Strategic Seaports. As an example, the 1184th Transportation Terminal Battalion (TTB) located in Mobile, Alabama supported six missions in fiscal year 2000 at the ports of Mobile and Beaumont loading more than 2,275 pieces of equipment. In fiscal year 2001, the 1184th TTB is scheduled to support eight missions at the ports of Mobile, Beaumont, and Gulfport. Additionally, the unit is scheduled to support the Operation Bright Star redeployment during their fiscal year 2002 AT.

All Commanders, both Active and Reserve, interested in utilizing Ready Reserve Force (RRF) ships for training, contact the local Maritime Administration (MARAD) representative for specific coordination and their supporting Regional Support Command (RSC) for funding. The RRF is a quick response surge sealift fleet under the custody of the MARAD. Again using the 1184th TTB as an example, during the mid 1990s, two RRF roll-on/roll-off (RO/RO) vessels (Capes Taylor and Texas) were moored in Mobile, Alabama, affording local units the opportunity to obtain hands-on ship loading operations experience. MARAD relocated the two vessels from Mobile, AL to Houston, TX. However, there are currently six Ready Reserve Force vessels located in the New Orleans area (approximately 2 hours travel time from Mobile, AL).

5. Senator SESSIONS. Both the Army and Navy have expressed interest in a capability similar to the capability of the high-speed fast ferry ship leased by the Australian Ministry of Defense. There have been press reports that the Army intends to procure a ship similar to the fast ferry ship and the Navy Warfare Development Command has expressed interest in leasing a ship for experimentation.

Is there a requirement within the Transportation Command for the capabilities of a fast ferry type of vessel?

Are there plans within the Transportation Command to evaluate the application of the capabilities of a fast ferry type of vessel to a Transportation Command requirement?

Is the Transportation Command involved in independent or services' evaluation of the fast ferry capabilities?

General ROBERTSON. USTRANSCOM is actively engaged in the testing and evaluation of high speed ships (HSS) for utilization by DOD in concert with our commercial partners. USTRANSCOM, through the congressionally-sponsored program Center for the Commercial Deployment of Transportation Technology (CCDoTT), has actively participated in the research and development of high speed sealift ships and agile port technology since 1995. The goal of the CCDoTT program is to facilitate systematic evaluation of various HSS hull form designs, and the associated technologies, in a cost effective manner. This will help expand the collective HSS knowledge base, while providing subsequent insights into the potential feasibility/capability of implementing these concepts on a larger scale. In light of the current technology explosion in the commercial sector, it behooves the Department to invest R&D dollars now in order to achieve the speeds necessary to meet future rapid force projection requirements. USTRANSCOM works directly with the High Speed Sealift/Agile Port (HSS/AP) Executive Steering Committee, the HSS/AP Innovation Cell, Office of Naval Research and Naval Surface Warfare Development Command to guide in the overall HSS/AP CCDoTT program.

Although there is no official requirement for a high speed inter-theater/intra-theater ferry, USTRANSCOM plays a very active role in identifying potential research and development efforts for possible utilization by DOD. The U.S. Army has an operational requirement document (ORD) for a high speed sealift ship to upgrade their existing logistics theater support vessel program. The Army's Tank Automotive and Armaments Command (TACOM) and the Navy Warfare Development Command (NWDC) are currently coordinating the lease of an existing high speed ferry to determine its applicability in meeting mission requirements. USTRANSCOM will continue to work very closely with TACOM and NWDC to monitor the progress of the test and evaluation. The lessons learned from the lease will be applied to the development of the next generation of high speed, trans-oceanic cargo ships to meet our future strategic sealift requirements.

QUESTIONS SUBMITTED BY SENATOR JOHN MCCAIN

6. Senator MCCAIN. As part of the Maritime Security Act of 1996, the Maritime Security Program (MSP) was created in an attempt to avoid the transportation problems experienced by the military during Desert Shield and Desert Storm, and to address concerns raised by the maritime industry regarding military movements during times of national emergency. The goal in establishing the new program was to strike a balance between the demands of our Nation's military and the commercial interest of vessel operators. As such, jurisdiction of the program was directed by Congress to the Secretary of the Department of Transportation (DOT). The President has proposed as part of the fiscal year 2002 budget submission to transfer the program to the Department of Defense (DOD).

What has occurred that would require placing the MSP under the jurisdiction of DOD?

If the transfer is allowed to proceed, what will have to occur for the DOD to assume jurisdiction over the MSP? Can we expect a legislative submission in the near future?

Assuming the MSP would come under your command if transferred to DOD, how would you plan to efficiently manage the program?

General ROBERTSON. I have not seen the analysis underlying the proposed transfer of the Maritime Security Program (MSP) from the Maritime Administration (MARAD) to the Department of Defense (DOD). That said, I understand the logic behind the proposed change is to co-locate “like programs” (strategic sealift) within DOD. This is a change from the way we have been implementing the program since its inception. Clearly DOD’s core competency has been in the “definition” of the military sealift requirement, while MARAD’s core competency has been tied to the commercial, trade-related and promotional needs of the U.S.-flag fleet and its associated mariner base. With each department working to its strengths, we believe we have had a successful and viable program. Along that line, if and when this program transfer takes place, we must seek to maintain that same effectiveness.

I am unclear, at this point, as to what roles and responsibilities might actually be transferred under this proposal, as no details have yet been provided. That said, aside from the obvious legislative and funding adjustments which would be required, DOD must determine who within the Department will actually administer the program. Once DOD determines the responsible agency, that agency will have to do a certain amount of requirements determination and “task organization” to most efficiently manage the program. I have seen no proposed legislation on this issue, but would anticipate, if the transfer is actually to occur, that the appropriate transfer language will be developed by June of this year.

Without the details of the transfer, it is hard to lay out a transition blueprint. We are taking the first steps now to lay the groundwork for a coordinated transfer plan with OUSD (C/TP) and Navy to ensure our readiness to assume the responsibilities of administering MSP at the beginning of the fiscal year if we are tasked to do so. My primary goal would be to set up a system as successful as the one we enjoy in the current DOD/DOT MSP relationship. At the least, we would have to develop the internal expertise (legislative, financial, public promotion, etc.) to execute and monitor the program. Clearly, it would involve a thorough review of the requirements needed to properly manage the program and allocation of the resources needed to meet those requirements.

QUESTIONS SUBMITTED BY SENATOR RICK SANTORUM

7. Senator SANTORUM. Kvaerner Philadelphia Shipyard and American Automar have sought my support in adding \$40 million in funding to the National Defense Sealift Fund during consideration of the Fiscal Year 2002 National Defense Authorization Act.

These funds would support the U.S. shipbuilding industry by providing for, under the National Defense Features (NDF) Program, the installation of military specific modifications in commercial ships that could be employed to support military requirements in a crisis. Kvaerner Philadelphia Shipyard believes that the current fleet of vessels that are chartered to carry out the ammunition resupply mission are old and slow and in need of replacement.

I am aware that Mobility Requirements Study 2005 (MRS-05) examined the number and mix of mobility systems needed to support two nearly simultaneous major theater wars. In addition, MRS-05 constituted an end-to-end analysis, investigating mobility requirements in the continental United States as well as between theaters and within individual theaters.

MRS-05 noted that the sealift investments made in response to the Mobility Requirements Study—Bottom-Up Review Update in 1995, have proven to be sufficient and that the Department’s overall mobility capability can be further augmented through aggressive use of commercial sealift enabled by selective containerization of unit equipment.

With MRS-05 in mind, and based on your expertise of U.S. military sealift requirements, please indicate whether you believe additional funding is required in the National Defense Sealift Fund to support the NDF Program.

General ROBERTSON. Additional funding for the NDF Program would be beneficial to the Department of Defense as well as the shipbuilding and operating sectors of the U.S. industry. This program, which has not been funded in recent years, has potential to contribute to the growing partnership between DOD and industry. As I have stated previously, we must be responsive to good proposals as they are generated, but not at the expense of DOD’s “top line”.

Currently Kvaerner Shipyard in Philadelphia has under construction fast container ships, which if modified using NDF funding, could be of considerable military utility. Modification of the ships with NDF funding would require the company that owns or controls them to make the ships available at the direction of the Secretary of Defense for strategic sealift purposes. Additionally, if the ships are offered under a competitive containership procurement, they could have further military utility as charter vessels. Kvaerner has requested \$40 million per vessel be made available under the NDF program to modify these ships to install self-sustainment cranes and other militarily useful features. The Military Sealift Command currently has eight containerships under charter, which preposition approximately 13,500 20-foot containers of ammunition and sustainment cargo. Replacing any or all of these re-flagged ships in a competitive procurement with newer, faster, U.S.-built container ships would not only continue to satisfy our prepositioning requirements, but would also improve TRANSCOM's ability to deliver sealift in a contingency once prepositioned cargo is offloaded.

Further, as Ready Reserve Force ships grow older it is important that recapitalization funding be allocated to replace the critical sealift capacity represented by this aging fleet. The NDF program could prove to be a very cost-effective way to do this. However, as I have noted before, while new funding is needed it should not come at the expense of other DOD programs.

QUESTIONS SUBMITTED BY SENATOR EDWARD M. KENNEDY

8. Senator KENNEDY. General Robertson, your testimony (page 24) mentions the need to begin considering ways to recapitalize the RRF. In previous Defense Authorization Acts, Congress has provided authority to use National Defense Sealift Funds (NDSF) to pursue an expanded program to provide more sealift capability through the National Defense Features (NDF) Program.

Are you expecting to make greater use of this program as a supplement to any future RRF modernization activities?

General ROBERTSON. In terms of Ready Reserve Force (RRF) modernization, the RRF is nearing completion of seven roll-on/roll-off deck expansion projects which started in 1998. These cost-effective projects added a spar deck to each ship netting an increase of 250,000 square feet of deck space to our overall surge fleet capacity which enables us to attain our MRS-05 surge requirement. These projects were funded through the Maritime Administration (MARAD) Planning, Programming and Budget System (PPBS) submissions and cost savings, not the NDF program. Since the NDF program started in 1996 industry has not viewed it as beneficial to their needs due to costs of maintenance, and legal restrictions imposed on commercial use of NDF. However, recent legislation has made it more appealing. Today one company is building two medium speed CV2600-class container ships, designed to achieve 23 knots, under the Department of Transportation (DOT), Title 11, Loan Guarantee Program, and is seeking congressional support for NDF funds to put cranes aboard these ships to make them self-sustaining and more militarily useful. The company's intent is to lease these new ships back to DOD for afloat preposition duty. I believe NDF is good for industry and DOD. Additional funding would make the program more viable if funds were available within the NDF line of the NDSF to respond to proposals as they are generated. However, I would not be supportive of this program if funding came out of our top line as this would impact the readiness of the programmed surge Ready Reserve Force which supports MRS-05 surge sealift requirements and CINC OPLAN deployment timelines.

TANKER REQUIREMENTS

9. Senator KENNEDY. General Robertson, recently, a number of Air Force witnesses have been complaining that the current tanker fleet, and apparently even those with the newer engines, is getting too old, and is spending too much time in depot maintenance. Many of these statements of concern have been supported by anecdotal information, but we have not seen a broader analysis of the fleet-wide situation.

Your prepared statement mentions that you have completed a tanker requirements study and an Economic Service Life Study of the strategic tanker fleet.

Will these studies provide more complete information on the problems that the Air Force is facing with its tanker fleet?

If not, can you provide the subcommittee with more specific information on the problems that confront the Air Mobility Command in keeping the current tanker fleet in a "mission capable" status?

General ROBERTSON. Senator Kennedy, thank you for highlighting a key concern of mine. The recently completed KC-135 Economic Service Life Study documents many of the problems Air Mobility Command faces with the tanker fleet. Air Mobility Command and the Oklahoma City Air Logistics Center jointly executed this study. The study was conducted to determine the cost of ownership and the availability of aircraft to the warfighter through the year 2040.

Let me take a moment to describe how we determine aircraft availability. Aircraft availability was calculated by taking the Total Active Inventory and subtracting projected numbers of aircraft in programmed depot maintenance, unscheduled depot level maintenance, modification status and field not mission capable status.

The KC-135 Economic Service Life Study took into account the Oklahoma City Air Logistics Center KC-135 Aircraft Availability Improvement Plan. Aircraft available will most likely improve (based on short-term programmed depot maintenance improvements) from 292 aircraft in 2000 to 340 aircraft in 2005 and then decrease (due to age-based challenges) to 290 aircraft by 2040. Short-term improvements include reduction in programmed depot maintenance inputs, concurrent work of modifications, and increased production capability.

Another tanker review, the Tanker Requirements Study for Fiscal Year 2005 (TRS-05), was conducted by Air Mobility Command in partnership with the Office of the Secretary of Defense Program Analysis and Evaluation division. The primary objective of this study was to determine the number of tanker airframes and aircrews needed to meet global aerial refueling requirements in the year 2005.

TRS-05 identified the need for approximately 500-600 KC-135R-equivalent tankers available to meet air refueling requirements, depending upon the scenario. None of the scenarios examined showed excess tanker capability; the study identified shortfalls for aircraft, which are driven in large part by the high number of KC-135 aircraft in depot. Assuming the Economic Service Life Study projections for 2005 are correct and assuming the KC-135 number of aircraft can achieve an 85 percent mission capable rate, many of the tail shortfalls could be mitigated using workarounds examined in the study. If the in depot remains at the current level, a significant tail shortfall results in most of the scenarios analyzed.

These two studies form the foundation for the upcoming Air Refueling Analysis of Alternatives. This cost-effectiveness study will help us determine the best way to meet the Nation's future air refueling requirements.

10. Senator KENNEDY. General Robertson, you mentioned during the hearing that there may be some equipment that the C-5 can carry, but that is beyond the capability of the C-17 to carry. Can you identify what that set of things may be?

General ROBERTSON. The C-17 Globemaster III and the C-5 Galaxy are the backbone of the strategic airlift arm of Air Mobility Command. Each aircraft is capable of carrying the vast majority of DOD's current inventory. Both the C-5 and C-17 routinely transport outsized cargo loads such as the M1-A1 Abrams Main Battle Tank, the Multiple Launch Rocket System (MLRS), and the Patriot Missile Launcher.

The C-17 and C-5 cross sectional loading areas are very similar; the main difference is the length of the cargo compartment. The C-5 is the largest airlifter in the free world. Its counterpart the C-17 is smaller, yet more agile, and is not capable of carrying relatively few pieces of military cargo primarily only due to the shear size and/or weight of the items. The type of cargo that can be carried by the C-5, but are either too large or too heavy to be loaded on the C-17 are: Mark V Special Operations Craft, Deep Sea Rescue Vehicle (DSRV), AFE-TAG 89-08 and AFE/PRO (Titan Payload Adapter), ACTS Satellite Shipping Container, MILSTAR Structure Payload Transporter, Shuttle Orbiter Transporter, and the NAVY FFG-7 Frigate Reduction Gear on its Transport Trailer.

11. Senator KENNEDY. General Robertson, this subcommittee has been very interested in the improving reliability for the C-5 fleet. You said during the hearing that the Oversize and Outsize Analysis of Alternatives (O&O AoA) was nearly completed.

Does that study include specific information on the condition of the fleet, by specific series, including such data as reliability status, flying hours expended, remaining airframe life, etc.? If not, can you provide such data for the record?

General ROBERTSON. Senator Kennedy, Air Mobility Command (AMC) identified a deficiency in meeting its wartime outsize and oversize cargo airlift requirements because of the poor reliability of the C-5 Galaxy fleet. The O&O AoA was conducted by AMC under the guidance of the Office of the Secretary of Defense to examine solutions to correct a deficiency in our Nation's outsize and oversize strategic airlift capability. The AoA developed and examined alternatives that satisfy Mobility Requirements Study Bottom-Up Review Update (MRS BURU) and preliminary Mobil-

ity Requirements Study 2005 (MRS-05) requirements to airlift outsize and oversize cargo. The goal was to determine the most cost-effective alternative to mitigate the outsize and oversize cargo airlift capacity shortfall generated by declining C-5 reliability. The AoA recommends that AMC complete the Avionics Modernization Program project on the C-5 fleet and begin the Reliability Enhancement and Re-engining Program (RERP), starting with the C-5Bs, to achieve a minimum 75 percent Mission Capable (MC) rate. Simultaneously, the study suggests the Air Force should continue to procure additional C-17s to meet new requirements. This "best value" recommendation will satisfy the increase in the O&O requirement established in MRS-05.

The AoA is finished and we are awaiting completion of the new administration's Strategic Review before releasing the results to you and the public. The AoA contains some of the information you are requesting. However, the AoA focused on the time frame of fiscal year 2005, not today. As a result, much of today's data is not included in the final report.

The AoA reiterates previous study results that emphasize the C-5's potential service life beyond 2040. Several studies, accomplished independently over that last decade, point to a long-lasting airframe. Specifically:

1994 Scientific Advisory Board: C-5 structural life at greater than 50,000 hours

1996 Lockheed-Martin Phase III Study: Estimates C-5 service life of greater than 60,000 hours

1997 IDA review: With proper fleet management the C-5 fleet should last past the year 2040 (25 years past modernization)

1999 SAF/AQ directed independent C-5 review (team members from AF, NASA, FAA): The projected economical use of the C-5 to the year 2040 is quite feasible

2000 O&O AoA (IDA Report): None of the {known} structural problems would terminate the life of the C-5 before 2040

The figures included in this response describe Departure Rates (Fig 1), Mission Capable Rates (Fig 2), and Flying Hours (Fig 3).

	Current Logistics Departure Rate (CY 00)	Projected Logistics Departure Rate (Before RERP) (includes AMP Improvements)	Projected Logistics Departure Rate (Post RERP)
	Peacetime	Peacetime	Peacetime
C-5A	80.1	84.0	93.6
C-5B	82.9	86.8	96.4
All C-5s	82.5	86.4	96.0

Figure 1

	Current Mission Capable Rate (Feb 01)	Projected Mission Capable Rate (Before RERP) (includes AMP Improvements)	Projected Mission Capable Rate (Post RERP)	Projected Mission Capable Rate (Before RERP) (includes AMP Improvements)	Projected Mission Capable Rate (Post RERP)
	Peacetime	Peacetime	Peacetime	Wartime Sustain	Wartime Sustain
C-5A	46.9	57.8	70.8	59.8	74.2
C-5B	70.4	68.7	79.4	70.5	79.5
All C-5s	58.7	62.1	74.2	64.0	76.3

Figure 2

	CY00 Flying Hour Program (Programmed) FH/PAA/YEAR	CY00 Flying Hour Program (Flown) FH/PAA/YEAR	O&O AoA Flying Hour Program FH/PAA/YEAR
C-5A	466	290	440
C-5B	765	868	740
All C-5s	585	519	600

Figure 3

QUESTIONS SUBMITTED BY SENATOR MARY L. LANDRIEU

12. Senator LANDRIEU. General, like the Chairman I am also a strong supporter of the Maritime Security Program (MSP) and the Maritime Security Act which requires that MSP vessel operators be majority owned by U.S. citizens. These programs are critical to ensuring vessels are available to TRANSCOM to meet wartime shipping requirements.

Do you believe the partnership between MSP vessel operators and TRANSCOM has worked well and does it provide DOD with the required sealift capacity?

Do you support the maintenance of the current Maritime Security Act requirements on ownership of vessels?

There has been discussion about possibly moving responsibility for operation of the Maritime Security Program from the Maritime Administration (MARAD) to the Department of Defense. Given MARAD's expertise on the commercial shipping industry, what is your opinion of this idea?

General ROBERTSON. Our partnership with the participants of the Maritime Security Program (MSP) has worked well to date, as these carriers are the nucleus for the Voluntary Intermodal Sealift Agreement (VISA). The VISA program has allowed DOD to develop wartime plans with the commercial sealift industry rather than rely on simply chartering or booking space on whatever vessels happen to be on the market at the time of a contingency. The 47 MSP vessel requirement was identified by USTRANSCOM, and coordinated within DOD, to meet specific sealift requirements that will be levied on U.S. commercial fleet during a Major Theater War (MTW). It is the capability of these ships, and the other 62+ vessels enrolled in the VISA program, combined with the vessels in the organic fleet that will meet the overall MTW shipping requirements.

It is important to maintain a mechanism that will guarantee accessibility of the commercial fleet during contingencies. The current requirements support that accessibility, and we must strive to preserve this program regardless of where its administrative functions reside.

USTRANSCOM has concerns about the proposed transfer of MSP to DOD. The current arrangement allows USTRANSCOM the ability to influence the program in the interest of readiness while not being directly responsible for obtaining funding or protecting the program. MARAD's current role in administering the program has worked well, allowing us to distance ourselves from the politics while ensuring our sealift requirements are met. This current proposal makes DOD carry the funding, administrative and legislative responsibility of the program. However, a strong commitment by all agencies to continue to maintain and enhance MSP in support of USTRANSCOM operational plans will continue to ensure the program's health and viability.

13. Senator LANDRIEU. General, when reviewing your prepared testimony, I was struck by a "good news/bad news" story—our sealift capability. You note that in 2002, when the last Large Medium Speed RO/RO (LMSR) ship is delivered, we will at last meet the sealift requirements documented by the 1994 Mobility Requirements Study—Bottom Up Review Update (MRS BURU). That's the good news. The bad news is that, the recently released Mobility Requirements 2005 Study indicates that cargo delivery requirements for two Major Theater Wars have increased to a level one million tons greater than the 1994 study. Plainly put, we'll still be in a deep hole with no plan to get out.

What is your best estimate on the number of additional LMSR ships (or others if you deem appropriate) necessary to cover that shortfall?

What is your estimate based on?

General ROBERTSON. I do not believe there is a need for additional LMSRs. The Mobility Requirements Study 2005 (MRS-05) final report, signed by the Secretary of Defense in January 2001, states that the sealift investments made in response to the 1994 MRS-BURU, particularly with the additional LMSRs, have proven to be sufficient. All of the lift requirements analyzed in MRS-05 have a size and a time element attached to them. The time element for this additional lift requirement does not equate to more ships due to the availability of second and third trip voyages as well as our commercial partnerships through the Voluntary Intermodal Sealift Agreement (VISA). Additionally, the report found that DOD's overall organic sealift mobility capability could be further augmented through aggressive use of commercial sealift enabled by selective containerization of unit equipment.

Over the last several years, we have made a concerted effort to maximize our use of containers in an effort to align our shipping requirements with the types of ships available. Together with containerization of unit equipment and access to commer-

cial shipping, timelines are significantly shortened for moving equipment and sustainment to both theaters.

14. Senator LANDRIEU. General, you have correctly criticized the abysmal state of the military's current household goods shipment system. I can't agree with you more. Given the economic and quality of life sacrifices we ask our military to make by moving every couple of years, I believe the least the government can do is ensure their belongings are moved in a timely manner without being damaged or destroyed. I've heard good things about the pilot programs you mention in your prepared statement and agree on the urgent need for reform in this area.

What immediate changes would you recommend to implement those pilot programs?

Does the Department of Defense require congressional approval to implement any of those changes?

General ROBERTSON. The Military Traffic Management Command is pursuing the incorporation of successful pilot features into the current personal property program as an interim solution while waiting for the evaluation of the pilots. This approach will allow service members and their families to begin realizing improved services much sooner than planned. The proposal is not intended to replace the pilots, but to capitalize on their successes—the real winner being the military family. In order to implement these pilot successes into the current program, a task force has been established, comprised of industry representatives and DOD, to review and coordinate the proposed changes. The features that are proposed for implementation are: (1) full replacement value coverage for lost and damaged items; (2) direct claims settlement with the contractor; (3) a toll free number for direct communication between the contractor and the member; (4) business awarded based on best value rather than low cost; and (5) use of customer satisfaction surveys to allow service members' input for the primary measure of carrier performance.

I do not believe congressional approval is required. The fiscal year 1999 defense authorization language required that the Military Traffic Management Command provide reports on the pilot to Congress. Two interim reports were provided: February 1999 and May 1999. The Military Traffic Management Command's final report was provided in August 1999.

We have noted that ongoing pilot programs are providing less than 10 percent of our service members the opportunity to experience an improved move process through the pilots, while more than 90 percent suffer the status quo. Implementing the successful features of the pilots will put us one step closer to our goal of improved quality of life for all service members. The military services have identified successful features of the pilot programs for immediate implementation. However, the transportation costs associated with these improvements are expected to increase. The Functional Economic Analysis conducted for the Military Traffic Management Command's Pilot Program indicated that transportation costs would increase between 18–25 percent in the pilot regions (outbound shipments from North Carolina, South Carolina, and Florida). If we implement the successful features of the pilots worldwide, we could expect an estimated 15 percent increase, which equates to approximately \$250 million annually. As is the case with many programs, funding will be a major hurdle.

15. Senator LANDRIEU. General, Fort Polk is home of the Joint Readiness and Training Center, a key facility used by the Army to train units prior to overseas deployment. The high throughput through Fort Polk requires advanced transportation facilities and they are currently constructing a new railhead to increase their throughput. Unfortunately, all units and equipment transported by sea have to be transported all the way to Beaumont, TX, for embarkation on transport ships.

The city of Lake Charles, LA, has worked hard to return their facilities to a state-of-the-art port.

I understand that you are not prepared to answer questions on this issue now, but I would like you to report back to us on efficacy of using Lake Charles as an embarkation port and what constraints, if any, prevent its use in the next 90 days.

General ROBERTSON. In 1997, a Gulf Coast strategic port selection study was conducted, which included the Port of Lake Charles, LA. At that time, Lake Charles' infrastructure did not meet the required baseline criteria. The Port of Lake Charles, LA, does, however, have adequate draft, berth length, apron width, and rail access to accommodate one Fast Sealift Ship (FSS) or Large Medium Speed RO/RO (LMSR) ship. The Ports for National Defense are reviewed every 3 years. The Port of Lake Charles, LA, is included in the Ports for National Defense as a potential alternative to deploy military equipment during contingencies. The Military Traffic Manage-

ment Command Transportation Engineering Agency (MTMCTEA) published an updated Gulf Coast Ports for National Defense in March 2000.

Requirements for port services are contingency driven. The Port of Beaumont, TX, is currently meeting these requirements in the Gulf Coast Region. This port is exercised two or three times annually as part of Joint Readiness Training Center rotations or Sea Lift Emergency Deployment Readiness Exercises in preparation for future contingency missions.

Since Beaumont is the prime Gulf Coast strategic port, use of this port to support these exercises is important in order to maintain wartime readiness. Co-location of our active duty unit at the port makes operations at Beaumont cost feasible and eliminates the need for travel. Additionally, the port of Beaumont gives us the flexibility to load and discharge the Army's largest cargo ships in three distinct locations at the port.

In the event additional Gulf Coast Corridor Port capability becomes necessary, the Port of Lake Charles, LA, will be considered in the port selection process. To complete the selection process, a team is established, comprised of representatives from MTMC, MARAD, and TEA. The evaluation begins with the collection and analysis of port characteristic data. Then team members tailor and prioritize the criteria based on requirements to support a worst case operations plan.

Finally, the team recommends port selection. Strategic port selection is derived by a need. Currently there is no requirement for additional capability in the Gulf Coast Corridor; therefore, no evaluation team has been established at this time.

[Whereupon, at 3:23 p.m., the subcommittee adjourned.]

**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2002**

THURSDAY, JUNE 7, 2001

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

**NAVY AND MARINE CORPS EQUIPMENT FOR 21ST
CENTURY OPERATIONAL REQUIREMENTS**

The subcommittee met, pursuant to notice, at 2:04 p.m. in room SR-232A, Russell Senate Office Building, Senator Edward M. Kennedy (chairman of the subcommittee) presiding.

Committee members present: Senators Kennedy, Lieberman, Landrieu, Reed, Sessions, and Bunning.

Committee staff member present: Creighton Greene, professional staff member.

Minority staff members present: Romie L. Brownlee, Republican staff director; Gary M. Hall, professional staff member; Ambrose R. Hock, professional staff member; and Thomas L. MacKenzie, professional staff member.

Staff assistants present: Beth Ann Barozie and Jennifer L. Naccari.

Committee members' assistants present: Menda S. Fife, assistant to Senator Kennedy; Frederick M. Downey, assistant to Senator Lieberman; Marshall A. Hevron, assistant to Senator Landrieu; Elizabeth King, assistant to Senator Reed; David Schanzer, assistant to Senator Carnahan; Arch Galloway II, assistant to Senator Sessions; Kristine Fauser, assistant to Senator Collins; and Derek Maurer, assistant to Senator Bunning.

**OPENING STATEMENT OF SENATOR EDWARD M. KENNEDY,
CHAIRMAN**

Senator KENNEDY. Senator Sessions will be joining us in a few minutes. I will make a brief opening statement and then we will proceed.

The subcommittee meets this afternoon to discuss Navy and Marine Corps equipment issues and needs in order to meet future operational requirements. We will hear from several witnesses today: Vice Adm. Dennis McGinn, Deputy Chief of Naval Operations for Warfare Requirements and Programs; Lt. Gen. William Nyland, Deputy Chief of Staff for Programs and Resources; Maj.

Gen. William Whitlow, Director, Expeditionary Warfare; Rear Adm. Michael McCabe, Director of Air Warfare; Rear Adm. Bruce Engelhardt, Deputy Director, Submarine Warfare; and Rear Adm. John Kelly, Deputy Director of Surface Warfare. I welcome each of our witnesses and look forward to their testimony.

I want to commend Senator Sessions for originally calling this hearing, and I thank Senator Sessions for his service as chairman of our subcommittee. We have, over the long period of time on this committee with Secretary Cohen and Senator Snowe and others, enjoyed a good bipartisan effort, as we should continue to do. I have enjoyed the chance to work with the Senator and look forward to that continued relationship.

I welcome the fact that we have had these hearings. I have indicated informally that because of the Senate floor schedule and my managing the secondary education bill, I will not be able to spend the time that I would have liked, but I will carefully read the statements. There are some questions to which I look forward to receiving responses.

This subcommittee has been particularly bipartisan. The members have worked closely together to deal with these important issues to help the Navy and the Marine Corps respond to challenges in the uncertain world we face. We have supported improved mine countermeasures. Our ships have to operate in waters close to potential enemy shores. We have supported improved ship self-defense, because by operating close to the shores our ships have less warning of missile attacks. We have helped the Navy improve its ability to provide surface fire support to forces ashore. I look forward to continuing these efforts.

The Secretary of Defense is currently conducting a broad strategy review about how best to provide for our national security in the years ahead. We look forward to receiving his recommendations. At the same time, there are a number of areas where the subcommittee can review the performance of specific programs and consider the best ways of meeting current and future operations requirements. We will continue to need strong naval forces to protect our interests in many areas overseas. We may need to change our approaches in some areas, but we will still need to ensure that we do not lose the very real advantages that our Navy and Marine Corps so skillfully provide.

Before hearing from our witnesses, we will recognize Senator Sessions for his opening remarks.

STATEMENT OF SENATOR JEFF SESSIONS

Senator SESSIONS. Thank you, Mr. Chairman. It is a matter that I think is our responsibility as a committee, to mark up a bill that covers our area of the waterfront, and to do so we need a record that justifies what we recommend. Your testimony is critical to that.

Senator Kennedy, I thank you for your cooperation when I briefly served on this committee as chairman, and for your long-time involvement in wrestling with the issues which really allows you to be extraordinarily valuable. I do not believe that we have any disagreements on any of the issues that are important to us. Thank you for your leadership.

I also know that you have been deeply involved in the education bill, and I understand that you have to leave.

Senator KENNEDY. Thank you, Mr. Chairman. It is easier when we do not have a Sessions amendment over there. [Laughter.]

We will start off with Vice Admiral McGinn. I will not have the chance to get into it, but we are going to request that the hearing give some focus on what has happened to the Navy seapower research and development and procurement programs. We were briefed last year, and I expect perhaps after you give your statement that you might make some comment on that.

Following Vice Adm. McGinn, we will have General Whitlow. We have had a longstanding interest in the mine countermeasure programs. I understand there may be a problem with one of the assault breaching systems, and it is not whether it works as advertised, but whether the system performance will meet the needs of the fleet. Perhaps you would be able to comment on that.

Then—Admiral Kelly—I was going to ask a question on the extended range guided munitions issues. We will either have you make some comments about that, or I will submit some questions. We are obviously going to have some questions on the V-22 and the Tomahawk programs and others. I see my good friend, Senator Lieberman, here as well, if you want to say a brief word.

Senator LIEBERMAN. No, Mr. Chairman. Thanks for convening the hearing. I look forward to the testimony.

Senator KENNEDY. At this time, I will insert into the record the statement of Senator Smith.

[The prepared statement of Senator Smith follows:]

PREPARED STATEMENT BY SENATOR BOB SMITH

Mr. Chairman and members of the subcommittee, I agree with the testimony provided by these fine representatives of the commercial shipbuilding industry. I am concerned about the statement that the shipbuilding industry is “surviving but struggling.” The 1997 Quadrennial Defense Review called for a 300 ship Navy to deal with operational requirements and issues of national security. The testimony provided today notes that during the years 2001 to 2010, the average number of ships scheduled for construction is 6 per year. If we assume that the average service life of our warships is 30 years, we will need to build a minimum of 10 ships per year to sustain a 300 ship fleet. Consequently, we cannot maintain force structure without increasing construction rates. While extending the life of our warships is an option, metal fatigue, corrosion, and reactor aging create risks to which we should not subject the men and women of our naval service.

I ask my colleagues to authorize and appropriate adequate funds for a 300 ship fleet. This funding should include a budget for the four major ship types—carriers, amphibious, submarines, and surface combatants. Our naval force should be the juggernaut expected of the world’s last superpower.

Senator KENNEDY. Admiral McGinn.

STATEMENT OF VICE ADM. DENNIS V. MCGINN, USN, DEPUTY CHIEF OF NAVAL OPERATIONS FOR WARFARE REQUIREMENTS AND PROGRAMS; ACCOMPANIED BY MAJ. GEN. WILLIAM A. WHITLOW, USMC, DIRECTOR, EXPEDITIONARY WARFARE; REAR ADM. MICHAEL J. McCABE, USN, DIRECTOR, AIR WARFARE; REAR ADM. BRUCE B ENGELHARDT, USN, DEPUTY DIRECTOR, SUBMARINE WARFARE; AND REAR ADM. JOHN M. KELLY, USN, DEPUTY DIRECTOR, SURFACE WARFARE

Admiral MCGINN. Thank you, Mr. Chairman, for the opportunity to come over this afternoon and address the Subcommittee on Seapower. With me today are the experts in their warfare areas, as well as my good friend and comrade-in-arms, General Spider Nyland. We are here to address your questions on those issues and programs affecting the ability of the United States Navy and Marine Corps to carry out our vital mission of providing seapower, forward presence, and credible combat capability across the mission spectrum. Our daily key challenge in our business lies in striking the right acceptable balance between current readiness, taking care of the fleet we own and operate today, and investing in our future capability while at the same time, perhaps even more importantly, continuing to recruit and retain our most precious resource, the sailors and marines who constitute our fleet.

As I make recommendations for warfare requirement priorities and program resourcing decisions to the Chief of Naval Operations, I am keenly aware that this committee takes interest in them. In the written statement that I provided, and I respectfully request that it be entered in the record, I laid out my rationale concerning changing naval concepts of operations and priorities.

This rationale is reflective of a sea change in the Navy, led by the Chief of Naval Operations, in response to the mismatch between resources and requirements he faced as a fleet Commander in Chief in the Atlantic fleet.

Admiral Clark, as a result, initiated an alignment of the Navy staff with the fleet in order to reconcile the resource-requirements mismatch. Our goal is to ensure that our program of record will deliver the warfighting capability that we need today and in the future.

Our emerging priorities for investment, by which I believe the Navy can best improve our warfighting capability for every dollar invested, are networks, sensors, weapons, and platforms. Platforms, our ships, submarines, and aircraft, have long been viewed as the principal symbols for any discussions about naval warfare capabilities but, as I believe the members of this committee fully realize, these platforms in and of themselves do not deliver the combat capability we need in the future unless and until they are networked to the rest of the fleet and to other services capabilities.

Networks ensure that, using the right sensors, we are able to provide shared and common knowledge of the battle space so that with the highly precision munitions that we are developing and fielding we can rapidly shift from our forward-deployed peacetime presence role to one of focused and very lethal power projection.

The combat capability established under the prioritization of networks, sensors, weapons, and platforms will truly enable us to bet-

ter achieve sea control in order to support joint land, air, and expeditionary forces from the sea.

In my written statement, I also provided this warfare rationale in lieu of specifics on our programs due to the unique nature of our current situation wherein we face significant requirement resource balancing challenges while at the same time participating in an ongoing top-down Department of Defense strategic review.

On a daily basis, we deal with specific programmatic issues such as mine countermeasures, amphibious ship readiness and new radar programs for our next generation aircraft carriers. These programs, as well as many others, will be clearly linked to the outcome of the analytical processes and studies that are currently underway in the strategic review.

I am confident that, as we in the Navy continually transform and modernize our forces, we will leverage technological opportunities offered by advanced, unmanned, undersea and surface vehicles such as the long range modern reconnaissance system, unmanned air vehicles and combat air vehicles. These capabilities, once fielded, will provide greater flexibility and freedom to maneuver in the littoral, especially in conjunction with the improved short access and survivability that we will gain from capabilities such as that provided by ship self-defense systems.

Ongoing discussions regarding other key sea power programs such as LPD-17, SH-60 Romeo helicopter, and the P-3 Orion aircraft program, are also of great importance. The ultimate success of these programs greatly depends on the performance of the Navy-industry team working to deliver warfighting capabilities to the fleet when it is needed. As you are well aware, there have been delays in the LPD-17 and the SH-60 Romeo programs. We are working diligently with the industry teams involved to put these programs back on track.

On the P-3 program, with the coordination of Congress and industry, we terminated the sustained readiness program when it became apparent that it was inexecutable at an affordable level of resourcing. We are now analyzing future alternatives to fill the critical mission of the current P-3 fleet, and ways to transition from that fleet to the best solution that our analysis of alternatives leads us to.

The recently announced delay of the down-select for our land attack destroyer, DD 21 as we call it, is also receiving a great deal of attention. As part of the strategic defense review, the Office of the Secretary of Defense has directed an updated study on shipbuilding that will help determine the most effective mix of ships in our programs, as well as the overall level of shipbuilding funding required to maintain a fleet of sufficient size to meet our national security strategy.

The outcome of that study will help us to be confident that the decisions we make regarding this major surface combatant investment will deliver the warfighting capability we need in sufficient numbers at the right time.

Senators, with the expert assistance of the experienced warfare sponsors who are with me today, we are ready to address your questions regarding these specific programs and any other issues of concern or interest. Thank you again for this opportunity, and

we look forward to your questions and also to continuing to work with you, your committee and staff, throughout the coming year. Thank you, sir.

[The joint prepared statement of Admiral McGinn, General Whitlow, Admiral McCabe, Admiral Engelhardt, and Admiral Kelly follows:]

JOINT PREPARED STATEMENT BY VICE ADM. DENNIS V. MCGINN, USN, MAJ. GEN. WILLIAM A. WHITLOW, USMC, REAR ADM. MICHAEL J. MCCABE, USN, REAR ADM. BRUCE B. ENGELHARDT, USN, AND REAR ADM. JOHN M. KELLY, USN

Thank you for the opportunity to be here today, and for your support of the United States Navy. I'll begin by briefly speaking to the unique and enduring contributions that forward deployed naval forces make to our national security. Clearly, our great Navy requires an ongoing investment by our Nation, but that investment brings a tremendous return for our Nation—every day, throughout the world, wherever our national interests are found.

THE VALUE OF NAVAL FORCES

There are four principal returns on that investment in the Navy:

- First, *command of the seas upon which the world's free trade structure rests*;
- Second, *U.S. sovereign power, overseas engaged every day in support of our national interests*.
- Third, the sustained access to the battlespace from forward deployed U.S. naval power that can maintain sea superiority in order to both project offensive fire power ashore as well as theater missile defense overland in the critical opening days of conflict
- Fourth, how naval forces forward enable the transformation of our sister Services to lighter and more rapidly deployable expeditionary forces that can flow into theater under the Navy's protective defensive shield overland while also providing "artillery from the sea".

ALIGNMENT

With this strategic template in mind, the Chief of Naval Operations (CNO) Admiral Vern Clark established my N7 organization to align the efforts of the staff here in Washington with the needs of the fleet that provides the return on the Nation's investment. This close alignment of structure and goals is critical as the Department of Defense conducts its overall strategic review and develops adjustments to the fiscal year 2002 budget and associated fiscal year 2003–2007 programs.

I am responsible for determining warfighting requirements and maintaining oversight of those programs that will deliver the capabilities required by our Nation. To achieve this, I must maintain close alignment with the fleet to understand their current readiness issues, and also with those organizations within the Navy responsible for experimentation. With these in mind, I am charged with charting the course to achievement of the Navy's future capabilities. The balance between those current readiness issues and future capabilities is at times difficult to strike.

In order to transform the current Navy into the kind of force envisioned for the future security environment, I must understand the characteristics of that environment and consider all of the missions it will likely demand. That future force will need to be able to provide sustained assured access to those regions where U.S. strategic interests lie, while maintaining the command of the sea that ensures the stability and security of the maritime commons upon which our economic prosperity relies. The force that provides this freedom—the U.S. Navy—will face a world increasingly interconnected through information technology and economic ties. A world where proliferation of modern weapons, advanced computing power and technologies, and global communications enable sub-national and regional actors to play a greater role in world events. Where terrorists and non-traditional adversaries may attempt to leverage asymmetric capabilities to their gain, and at our expense.

To prepare for this environment, I believe we must continue and accelerate the development of Network Centric Warfare tactics, techniques and procedures while iteratively developing the hardware and software necessary to maximize the potential of these concepts. Some have recently begun to refer to this new approach as "Spiral Development"—taking that which we know works and implementing a working solution allowing further development in place. In essence, we field the 80 percent solution and iterate upon it based upon fleet input, rather than wait for the

100 percent solution which may never be achieved in development, and which might still fall below fleet expectations. Our goal is to rapidly transform our current fleet into the interoperably networked, agile, expeditionary force required for the 21st century threat. This concept will allow precision targeting of those aimpoints that will generate only those effects required to win in conflict.

Thus, as the Navy forges ahead into the 21st century, we will retain the core capability of sea dominance to provide free transit of the world's oceans. To an even greater extent than today, we will rapidly leverage technological advances to apply decisive force in combat. We will remain an expeditionary force that provides a return on the Nation's investment across the entire spectrum of conflict—from peace, through crisis, and in high intensity conflict.

TRANSFORMATION

This “Rapid Transformation” has begun. For the Navy, transformation is not about getting lighter. It is about gaining more capability per pound. If one of the major news sources ran a headline that I had recommended arming the E-2C Hawkeye with Standard Missiles, or that I wanted to outfit the entire Nuclear Aircraft Carrier Fleet with Aegis Combat System; or that the Navy wanted to procure Joint Surveillance Target Attack Radar System (JSTARS), I believe your committee's interest would be piqued. Yet that is exactly what Network Centric Warfare will enable—without the Navy having to procure the equipment for previously non-enabled platforms! By networking our force and ensuring its interoperability with the Joint Force, we provide the benefit of the E-2C's antenna height and capability to the Standard Missile shooter via Cooperative Engagement Capability (CEC). We've demonstrated interoperability with JSTARS and the U-2 in Fleet Battle Experiments and Limited Objective Experiments. Our vision is of a deployed Navy with seamless reachback to shore-based forces to enable access to tactical expertise from our Continental U.S. based centers of excellence. This same reachback will improve the quality of service for our people through distance learning programs and connectivity to the “real world” while forward deployed. We envision ships, aircraft, and submarines linked with a common picture of their tactical environment, able to achieve desired effects through precision targeting, to include the most time-critical targets. A Navy with the tools required to leverage its inherent mobility through rapid and accurate decision making, and the weapons required to achieve lethal and decisive results in combat while leveraging the strengths of our allies and coalition partners.

The following slide is a depiction of the capability linkages that Network Centric Warfare will enable. These are key to Navy's transformation to the force we envision.



For Navy,
It's Not
about
"Getting Lighter"...

Transformation

It's about
Getting More
Capability
per pound!

N7
Naval Warfare

We're accessing:

–AEGIS on the CVN	–JSTARS on the SSN
–Standard Missile on the E-2C	–Periscopes on the ARG
–RMP on the DDG	–Super Hornets on the Cruiser
	–Schoolhouses from Sea

The Power of Network Centric Warfare

Moore's Law will continue to make it more affordable and achievable.

PROCUREMENT PRIORITIES

For the Navy to achieve this vision, we must prioritize the application of our resources to networks first. This will provide the greatest return for the expenditure of our investment dollar. The data links and systems which will network our existing forces are fundamental, but must be populated with information provided by advanced sensors, for these will enable the granularity necessary to provide knowledge to the forces or "nodes" on our network. These forces will employ increasingly precise weapons based upon the knowledge provided to the warfighter via this "expeditionary sensor grid". Finally, our resources must be applied in the most efficient manner to recapitalizing the platforms that will carry naval warfighters to the littorals, capable of projecting power and even defense ashore, from the sea.

This prioritization upends the traditional focus of our budgets, and to some, appears to endorse a reduction in force structure size. This is not the case—numbers do matter—but *the number is less important than the capability* inherent in those numbers! Thus, given the resource-constrained choice between a given number of platforms and a lesser number of those same platforms enhanced by a full complement of offensive and defensive capabilities and sensors, I would opt for the lesser number of more-capable platforms. The balance that must be achieved hinges upon the Global Naval Force Presence Posture (GNFPP), our National Security Strategy, commitments by the National Command Authorities to support contingency operations, and the level of resourcing available. Regardless, by applying this prioritization to the choices, I believe we will arrive at the most capable force for the future, while making the hard choices required to provide capability today.

While there has been much recent debate about the relevance and survivability of the Aircraft Carrier, note that the Navy vision of transformation does not entail moving away from this platform. The Aircraft Carrier remains survivable based upon its mobility, which vastly complicates an enemy's targeting problem (a 700 square mile area of uncertainty in only 30 minutes). It is also survivable because of its robust design, defensive systems, and connectivity to the battle group's netted defenses as well. Still, this misses the point. *The Carrier Battle Group and the Aircraft Carrier itself are lethal to enemy forces*, with an ever-increasing ability to strike and destroy those enemy systems and capabilities that would threaten not only itself, but the other friendly forces and non-combatants in the region as well. Its

myriad capabilities in peacetime presence, heightened tensions, crisis and high-intensity conflict are simply unparalleled.

EXPERIMENTATION

Much has been made in the media of innovative and captivating concepts being discussed openly at our centers of excellence in higher learning and experimentation. Among the many concepts we are looking at are conceptually small, nimble yet heavily armed surface combatants capable of sustained high speeds. Just as present day forces reflect the work of many previous years of analysis over a wide range of available options to meet the Navy's missions, these concepts represent the continuing process of assessment of alternative options for potential forces of the future.

Unlike programs that produce specific pieces of hardware or software, these are concepts with which the Navy might conduct Maritime Warfare in the future. Utilizing a broad range of evolving and new technologies, they provide a basis for discussion inside the Navy, as well as a means to engage the private sector through interested organizations and industry, to encourage debate and solicit the best ideas on fulfilling future Navy missions.

These concepts are not intended to be, nor will they be developed as programs unless a full vetting of alternatives is performed which concludes they are the most appropriate options for future forces. If determined to be promising, components of these concepts may be developed as part of other new or existing programs, as opposed to stand-alone programs.

This is the role of Experimentation in today's Navy. We do not shy away from ideas that might challenge the Program of Record, for if the Program of Record cannot pass muster when compared to conceptual alternatives then it indeed deserves to be challenged. The programs and concepts we are experimenting with constitute the groundwork for the "Navy After Next". The "Next Navy" already exists in our budget, and you are clearly familiar with the programs that will reconstitute today's Navy, such as CVN(X), F/A-18E/F and Joint Strike Fighter (JSF), *Virginia*-class Submarine, DD 21 and LPD-17. These recapitalization programs have established Operational Requirements Documents from which we can evaluate developmental performance. Yet while we understand those validated requirements, we learn more about their ramifications on cost and other performance tradeoffs as we progress in development. As unacceptable situations—such as cost overruns, changing threats, or unacceptable performance in unforeseen regimes—arise during development, I believe we must make informed and fully-vetted requirements tradeoffs in order to field a needed capability improvement that is "good enough", although it may not meet the originally stated requirement definition to the letter.

CONSTRAINTS

The ongoing strategic review comes at a critical time for the Navy. Strategic reassessment of required operational tempo, force structure levels and mix, and new initiatives in Ballistic Missile Defense will factor strongly in the administration's guidance and resource level requests. These factors will provide the boundaries within which the Navy must determine the best achievable balance between readiness and modernization. The priorities reflected above for application of modernization resources—Networks, Sensors, Weapons and finally Platforms—will be reflected in the mix as the Navy rapidly transforms to continue ensuring freedom of the seas.

NAVY TODAY; NAVY NEXT

Today's Navy incorporates the most impressive array of capabilities ever fielded upon the world's oceans. It is more than ready for the tasks it faces on a daily basis, and equal to the likely challenges our potential adversaries are capable of presenting. Nevertheless, it is "wearing thin" from heavy use and insufficient upkeep, recapitalization and maintenance. We have knowingly sacrificed these in order to maintain the strategic depth which best offset the risks assumed under the prevailing strategy. Although we have seized upon the catalytic concept of Network Centric Warfare as a capstone concept for transforming the Navy, we have had little discretionary capital to apply when faced with the near-term challenges.

With a growing emphasis on the Asia/Pacific region, the Navy's combat credible forward presence will be required perhaps even more in the future than today. The requirement to recapitalize our force will be undiminished, and facing the future security environment described above, our modernization accounts will require significant resources. As the other Services continue their transformation to lighter more-expeditionary fighting forces, the Navy will assume an even more significant role in providing the sea-based fires and logistics that will enable that transition. Under

those circumstances, an adept, ably netted, and highly lethal force, able to project offensive combat power and a defensive “umbrella” far inland from the sea will be fundamental in crisis, and the command of the sea, which some take for granted, even more critical.

CONCLUSION

America rests its prosperity upon seapower. Nowhere is this more appreciated perhaps than in this committee. Yet something as fundamental as this is often overlooked. The strength and health of our Navy, today and in the future, underwrites the health and strength of our Nation. Our Nation’s considerable investment of resources in the Navy has been returned manifold times by our vigilance and capability to command the seas. As we face the future, it is important to recognize both the opportunities and challenges before us. To reap the maximum benefit of our investment, it will be critical to apply our resources wisely, prioritized to meet the challenges ahead with the right investments, and with capabilities both flexible and unassailable by those who covet our prominence.

Senator LIEBERMAN [presiding]. General Nyland, I understand you are next.

STATEMENT OF LT. GEN. WILLIAM L. NYLAND, USMC, DEPUTY CHIEF OF STAFF FOR PROGRAMS AND RESOURCES

General NYLAND. Thank you. I would like to thank the chairman, Senator Kennedy, Senator Sessions and members of the committee, for the privilege to appear before you today to discuss your Marine Corps. I would ask that my formal statement be included in the record, and I would also like to briefly update you on the Corps since my predecessor, Lieutenant General Williams, appeared before the committee last year.

First, on behalf of the marines and their families, I would like to thank you for your continued support in addressing many of the resource challenges we have faced in recent years. Your efforts reveal not only a commitment to assuring the common defense, but also a genuine concern for the welfare of our marines and their families. Your support has been and will continue to be critical to the readiness in the Corps.

Second, as we enter the uncertain world of the 21st century, the strategic role of the Marine Corps, as defined by the 82nd Congress, to provide a capable expeditionary force and readiness that is versatile, adaptable, and powerful, remains more relevant than ever before. Once-stable nation states are imploding, and ethnic hatred, religious strife, and clan warfare serve as tinder for transnational events.

Coupled with this is a radical shift in world demographics, economic interdependence, and technological diffusion. In short, it is a time of great uncertainty and instability. With that in mind, we are well on our way toward fielding systems that will allow the Corps to enhance our capabilities as the Nation’s premier expeditionary force for the 21st century.

The major systems that compose the foundation of our strategy and operational concepts include the Joint Strike Fighter (JSF), the Advanced Amphibious Assault Vehicle (AAAV), the MV-22, and the Landing Craft Air Cushion (LCAC). The convergence of many of these initial capabilities occur in fiscal year 2008. Together with the indirect fire support systems of the lightweight 155 and the HIMARS, High Mobility Rocket System, will enable the Corps to take full advantage of emerging and available concepts and technologies.

Our expeditionary fighting vehicle, the AAV, will deliver over-the-horizon maneuver capability that begins afloat and continues ashore. Most recently, this superb program, the winner of two Packard awards, entered the engineering and manufacturing development phase, having completed the Defense Acquisition Board review in November.

The MV-22, whose technology the blue ribbon panel just gave a thumbs up and called a national asset, will provide greater range, speed, and flexibility, enabling the rapid build-up of combat power ashore.

The LCAC Service Live Extension Program (SLEP) will significantly enhance our ship-to-shore maneuver from over the horizon. Similarly, the Joint Strike Fighter will bring stealth, versatility, and the Nation's leading edge technologies to the battlefield. To date, the two-concept demonstrators' performance have both been superb.

Also critical in the evolution of expeditionary maneuver is indirect fire support. Our modernization efforts address this vital capability through the lightweight 155 and the HIMARS. These two joint programs with the Army are on track, and will greatly enhance maneuverability and flexibility on the battlefield, to include greater range and lethality.

Collectively, these systems enable the Marine Corps to successfully operate in a changing world, exploiting our expeditionary maneuver warfare concept. These systems will deliver the needed support to ensure success for the troops on the ground. Through these efforts, and with your support, we are prepared to embrace the challenges and opportunities of the future. Naval forces, Navy and Marine Corps expeditionary forces, and integrated air-land-sea combined arms units are ideally suited to meet these challenges. They are powerful instruments of national policy and provide the national command authorities with a multitude of diplomatic and military options to support U.S. foreign policy initiatives.

I look forward to serving the committee today and to receiving your questions. Thank you again for the opportunity and for your continuing support.

[The statement of General Nyland follows:]

PREPARED STATEMENT BY LT. GEN. WILLIAM L. NYLAND, USMC

Mr. Chairman, Members of the Committee, it is my privilege to appear before you today to discuss Marine Corps operational concepts and the research and development and equipment required to carry out those concepts in the 21st century.

On behalf of marines and their families, I would first like to thank you for your continued support in addressing many of the resource challenges we have faced in recent years. Your efforts reveal not only a commitment to ensuring the common defense, but also a genuine concern for the welfare of our marines and their families. Your continued support is absolutely critical to the readiness of the Corps.

As we enter the uncertain world of the 21st century, the strategic role of the Marine Corps, as defined by the 82nd Congress—to provide a capable expeditionary force-in-readiness that is versatile, adaptable, and powerful—remains more relevant than ever before. Once stable nation states are imploding and ethnic hatred, religious strife and clan warfare serve as tinder for transnational events. Coupled with this is a radical shift in world demographics, economic interdependence, and technological diffusion. In short, it is a time of great uncertainty and instability.

To meet the threat demands of the new century, the current National Military Strategy (NMS) calls for flexible and multi-mission capable forces to respond to the full spectrum of conflict. The NMS stresses the need for Joint forces that can address multiple small-scale contingency operations, and that are able to transition

rapidly from peacetime operations to full-scale conflict. Naval Forces—Navy and Marine Corps expeditionary forces—integrated air, land, and sea combined-arms units—are ideally suited to meet these challenges. They are powerful instruments of national policy and provide the National Command Authorities with a multitude of diplomatic and military options to support U.S. foreign policy initiatives.

MARINE CORPS EXPEDITIONARY MANEUVER WARFARE

Expeditionary Maneuver Warfare (EMW) is the Marine Corps capstone concept for the 21st century. Built on the twin pillars of our philosophy of maneuver warfare and our expeditionary culture, EMW prepares the Marine Corps to meet the challenges and opportunities of a rapidly changing world. The concept describes the evolving characteristics and capabilities that the Marine Corps will employ to promote peace and stability and to mitigate or resolve crises.

EMW describes the “axis of advance” for future enhancements. In doing so, the concept focuses on:

- **Strategic Agility:** to ensure rapid and fluid transition from pre-crisis state to full operational capability in any distant theater. This requires ready forces that are both sustainable and rapidly tailorable for multiple missions or functions. They must be agile, lethal, swift in deployment, and always prepared to reconstitute or move immediately to the scene of an emergency or conflict.
- **Operational Reach:** to rapidly project, support, and sustain relevant and effective power, in conjunction with other forms of national influence. This can be accomplished independent of host nation support and against distant objectives across the breadth and depth of a theater of operations.
- **Tactical Flexibility:** to create an overwhelming tempo of action through synchronized application of effects, and responsive and adaptive command and coordination. These effects will rapidly erode an enemy’s cohesion.
- **Support and Sustainment:** to enable the enduring expeditionary logistics capabilities of Naval Forces in order to project influence. This will be accomplished by optimizing our deployment support, force closure, force sustainment, reconstitution, redeployment, and strategic reach back capabilities.
- **Joint/Multinational Enabling:** to enable Joint, Allied, and Coalition operations (and inter-agency coordination) by blending the unique, combined-effects capabilities of Marine Forces with complimentary capabilities of others. The forward presence posture and rapid response time of sustainable Marine Forces provides unmatched enabling capabilities for the Joint Force Commander.

These enhancements will bolster our ability to reassure and encourage our friends and allies while we deter, mitigate, or resolve crises through speed, stealth, and precision.

THE MARINE AIR-GROUND TASK FORCE (MAGTF)

The Marine Corps operates as MAGTFs, fully integrated, and scalable combined-arms forces that include air, ground, and combat service support units under a single commander. MAGTFs are organized, trained and equipped from the operating forces assigned to Marine Corps Forces, Pacific; Marine Corps Forces, Atlantic; and Marine Corps Forces, Reserve. The Commanders of Marine Corps Forces Pacific and Atlantic provide geographical combatant commanders with scalable, flexible MAGTFs that possess the unique ability to project mobile, reinforceable, sustainable combat power across the spectrum of conflict. Marine Corps Forces, Reserve provides ready and responsive marines and Marine Forces who are integrated into MAGTFs for mission accomplishment.

From the decks of ships, to deep inland objectives, marines deploy and operate as a combined-arms team—infantry, artillery, combat engineers, logistics, and aviation. These MAGTFs are self-sustaining, rapidly deployable, and generate maximum combat power with minimum logistic support ashore. They operate effectively alongside other services as well as allied forces and are well prepared to significantly contribute to future joint and combined operations.

MAGTFs are comprised of elements that vary in size and composition according to the mission and are specifically tailored for rapid deployment by air, land, and sea.

ELEMENTS OF THE MAGTF

Command Element (CE): The Command Element is the MAGTF headquarters task organized to provide joint force command and control, intelligence fusion, and crisis action planning. Because we fight shoulder to shoulder with the Army, control the skies with the Navy and Air Force, and come from the sea, we aggressively seek joint solutions to our communications and command and control requirements. Technologically advanced weapons systems require joint, secure, technologically interoperable systems to support them. The modernization of the command element requires the fielding of MAGTF command and control systems that support joint and combined warfighting; therefore, we are participating in the joint family of interoperable pictures that will integrate us vertically from the firing unit level to the National Command Authority level and horizontally across all Services. We must modernize and transition several of our existing capabilities to meet requirements in a joint environment. The improved capabilities provided by programs such as the Common Aviation Command and Control System (CAC2S), Unit Operations Center (UOC), Cooperative Engagement Capability (CEC), and the Joint Tactical Radio System (JTRS) are critical in allowing commanders the ability to manage, direct, and influence an increasingly complex battle space, while also allowing reach back to our bases and stations, the fifth element of the MAGTF. With your support we will continue to improve our existing systems and drive toward joint solutions.

Ground Combat Element (GCE): The Ground Combat Element is formed around ground elements that maneuver from expeditionary bases both afloat and ashore. The primary equipment and weapons systems in our ground combat element are aging and reaching their programmed service life all at the same time. We have taken advantage of Service Life Extension Programs (SLEPs), which have enabled us to marginally improve our legacy systems, but cannot fulfill our modernization needs. Our 28 year-old Amphibious Assault Vehicles (AAVs), which originally had a programmed life of 10 years received a service life extension to add another 10 years to their life, and are now undergoing a rebuild to extend their service life until our new expeditionary fighting vehicle, the Advanced Amphibious Assault Vehicle (AAAV), is fielded in fiscal year 2006.

Our reliance on aging equipment negatively impacts our capabilities in many ways. Among them, the buildup of combat power ashore is slowed and more predictable, and our single artillery piece lacks sufficient range to provide essential fire support to maneuver elements. Additionally, the countless hours of maintenance on our aging ground systems directly impacts the quality of life of our marines. The replacement of the 17,000-vehicle fleet of High-Mobility Multipurpose Wheeled Vehicles (HMMWVs) with the HMMWV A-2 is a crucial step in our efforts to modernize our ground mobility. Acquisition of major replacement systems such as the AAAV, the High Mobility Artillery Rocket System (HIMARS), the Lightweight 155mm howitzer (LW155), and the M88A2 Hercules Improved Recovery Vehicle, is only part of the solution. We need to accelerate the pace of procurement and fielding of new and replacement equipment.

Aviation Combat Element (ACE): The Aviation Combat Element is formed around aviation maneuver units employed from expeditionary bases both afloat and ashore. The majority of our aircraft, our KC-130F, CH-46E, CH-53D, and UH-1N, have exceeded their projected service life. Our KC-130Fs are 19 years past planned retirement. Our CH-46Es and CH-53Ds are more than 30 years old, and the average age of our CH-53Es is 12 years. Replacement aircraft, specifically the KC-130J, and the MV-22, as well as upgrades to our UH-1N and AH-1W fleet are critical in order to significantly improve operational capabilities, resolve existing safety deficiencies, and reduce life-cycle costs.

Combat Service Support Element (CSSE): The Combat Service Support Element of the MAGTF is formed around tailored support units that provide the full range of combat service support functions and capabilities necessary to support the readiness and sustainability of the MAGTF as a whole. Despite the importance of combat service support to the flexibility and responsiveness of our forces, we continue to rely on aged vehicles, trucks, and materiel handling equipment that needs replacement. For example, our five-ton truck fleet is at the 19-year point of its planned 20-year life. Acquisition of the Medium Tactical Vehicle Replacement (MTVR), a cost-effective replacement for our existing tactical trucks, and the M88A-2 Hercules Improved Recovery Vehicle, a successor to our 24-year old tank retriever, is crucial in our efforts to modernize.

Supporting Establishment: The Supporting Establishment is the "fifth" element of the MAGTF. Our bases and stations provide direct and indirect support to the MAGTF as well as the means by which we develop, train and maintain a modern force. They are platforms from which we project expeditionary power and sup-

port the quality of life of our marines and their families back home. As a critical part of our readiness, we must ensure our bases and stations are also a significant part of our modernization effort.

NAVAL EXPEDITIONARY CAPABILITIES

Key to exploiting the tremendous potential of Naval Forces, and in particular, Marine Corps expeditionary units, is a robust Navy ship construction program for modern amphibious lift. These platforms facilitate rapid, decisive operations from the sea, across the spectrum from humanitarian operations to power projection for combat. Our amphibious lift requirement is well defined, requiring modern ships to meet forward presence requirements while maintaining the flexibility to surge additional forces for the uncertain crises of the future. Although our amphibious lift requirement is for sufficient ships to lift 3 Marine Expeditionary Brigade (MEB) Assault Echelon (AE) equivalents, fiscal constraints have resulted in plans which limit the planned and programmed amphibious force to 2.5 MEB AE equivalents, a total of 36 ships (or 12 Amphibious Ready Groups). This requirement will be sustained with the completion of the twelfth LPD-17 class amphibious ship, modernizing and enhancing our amphibious lift capability. Currently, the Navy is planning a future amphibious force of 12 big deck ships (a mix of aging LHAs and newer LHDs), 12 newer LSD 41/49s and, with your continued support, 12 new LPD-17 *San Antonio*-class ships.

Today, the Navy-Marine Corps team relies on some amphibious ships, which, like our ground and aviation equipment, are reaching the end of their service lives. The LPD-17 class ships will replace four aging classes of ships and will provide increased operational capabilities and greater amphibious lift per ship. As our LHAs approach the end of their service lives in 2011, we can improve our big deck capability by using the LHD-8 as the transition ship to a LHA replacement. This will be a critical component of a powerful Navy-Marine Corps team, providing capable ships as platforms for deploying and employing modern forces.

Another critical component of our strategic lift capability is the Maritime Prepositioning Force (MPF), which provides the Unified Commanders thousands of C-17 sortie equivalents of combat equipment and sustainment already forward located in their areas of responsibility. However, the MPF ship leases will expire between fiscal year 2009 and fiscal year 2011 and we will need National Defense Sea-lift resources to replace these cost effective and proven strategic assets with MPF Future ships. Because the U.S. has never been able to rely exclusively on forward basing or overseas access as means of positioning forces, and with base access increasingly problematic, Naval forces must continue to provide robust assured access with forward presence and the projection of power and influence from the sea. Our Sea Based Logistics concept envisions use of the sea as maneuver space and a sanctuary for the safe-basing of long range, precision Naval fires, force assembly, maintenance, and resupply in future operations. MPF Future will be a key enabler of the sea-based operations necessary to support expeditionary maneuver warfare, providing support for forces already forward deployed or deploying in amphibious ships as well as rapid response with tailorable and scalable stocks for crises.

To continue to assure access in the littorals, modernization is necessary to overcome the logistical challenges of ship-to-shore movement, to improve Naval Surface Fire Support (NSFS) in "transforming fires," as well as to improve Navy and Marine Corps mine countermeasure capabilities.

An objective of Naval forces' ship-to-shore movement is to avoid, or go around, the mine threat. Efforts in increasing mine warfare capability in the waters greater than 40 feet are commendable, and the organic capability envisioned in the Carrier Battle Group will greatly enhance assured access. However, we can ill afford to move 3,000 miles to theater and be stymied by mines and obstacles in the last 3,000 yards. We applaud the steps taken to leverage technology to improve our surf zone, shallow water, and very shallow water mine countermeasure capabilities-aimed at the far-term (fiscal year 2010 and beyond). This will "take the man out of the mine-field" by developing standoff breaching capabilities for this most challenging of water regions. We remain concerned about the capabilities to address this critical region in the near- and mid-term.

The Landing Craft Air Cushion (LCAC) SLEP will ensure that LCACs continue to provide over-the-horizon logistical support long past their current 15-20 year service life. This program will significantly enhance the LCAC's command and control, navigation, performance and service life, resulting in a landing craft that will support Navy and Marine Corps expeditionary operations for the foreseeable future. The LCAC is an important part of our tactical mobility triad with the MV-22 Osprey and the AAV expeditionary fighting vehicle.

Using the sea as a base for long range, precision fires, marines look forward to modernization or replacement of today's destroyers and cruisers with future surface combatants and submarines equipped with modern naval guns and missiles. With our Navy assuring blue-water access to a littoral environment where anti-ship missiles, diesel submarines, and sea mines proliferate, the Navy is also exploiting all technological advances to improve our surf zone, shallow water, and very shallow water mine countermeasure capabilities.

THE WAY AHEAD

At the dawn of the 21st century, we are ushering in the MV-22 Osprey tilt-rotor aircraft, AAV, Joint Strike Fighter (JSF), MTVR, Logistics Vehicle System Replacement (LVSR) Program, LW155, and the *San Antonio*-class Landing Ship LPD-17, all of which promise to greatly enhance the Corps firepower, mobility and mission flexibility, and are integral to the Corps' concept of enhanced power projection. These major contributions to the development of warfighting concepts, weaponry, and equipment will enable the Corps to operate in the 21st century with a confidence born from a proud heritage of innovation, ingenuity, and a willingness to continually adapt to changes across the spectrum of conflict. While we have a viable plan to field this, and other new and improved equipment, I remain concerned about the slow pace of our modernization efforts.

Dramatic increases in operational requirements, coupled with topline constraints over the last several years have forced us to fund near-term readiness at the expense of equipment modernization and investment in infrastructure.

Our equipment (ground and aviation) modernization accounts have been funded well below the historical "steady state" level for most of the last decade. As a result, much of our ground equipment, aircraft, and weapons systems have reached or exceeded the end of their useful service lives. We are facing block obsolescence in our major ground and aviation equipment. The costs to maintain these systems—in terms of both dollars and man-hours—continues to climb. While we have taken advantage of SLEPs for both our aviation and ground systems, these efforts cannot fulfill our modernization needs.

Our reliance on aging equipment negatively impacts our capabilities. Countless additional hours of required maintenance directly impact the quality of life of our marines and allow less time for their training. We can no longer afford to delay the modernization of our force.

The continued support of Congress has allowed us to make significant progress in solving some of our most pressing needs, however, these problems did not occur overnight and neither will a solution. Based on our current strategy and structure, the Marine Corps requires an increase of approximately \$1.8 to \$2.0 billion per year sustained for the next 8 to 10 years in order to meet tomorrow's challenges and to maintain the "expeditionary force in readiness" our Nation requires. This estimated shortfall in funding may change as a result of the Secretary's strategy review that will guide future decisions on military spending. However, an accelerated modernization program will allow us to maintain the technological advantage we currently enjoy on the battlefield, will reduce our operating costs, and will allow marines to spend more time doing what the American public expects of them—training and deploying in the defense of our vital national interests.

Your marines deeply appreciate your unwavering support.

Mr. Chairman, I would be happy to answer any questions.

Senator LIEBERMAN. Thanks, General. Do I understand that it is time to go to questions?

Admiral MCGINN. Yes, sir.

Senator LIEBERMAN. Thanks very much for your testimony.

Admiral McGinn, let me begin with you and ask you, as I think about this priority list you have given us of network sensors, weapons, and platforms, if I looked at the budget for 2002, and I suppose in another sense when we get it, whenever we get it, would those priorities be reflected?

Admiral MCGINN. No, sir, not to the level that they need to be to truly move us in the direction of the capabilities the network centric warfare will provide us. We are underinvested in those programs. I would say that that is principally due to the fact that, as we have come down in force structure and in funding, as our forces

have aged, as we have continued to retain, or recruit and retain the best quality force, the priorities for those programs being less visible have not been there in our end game budget decisions, but I assure you that in the future they will be.

Senator LIEBERMAN. So I presume that in some sense the priorities may be inverted, that we are spending more for platforms?

Admiral MCGINN. Yes, sir. In the past I think that is exactly the way it has been, almost a perfect inversion, principally because of the higher visibility of platforms, and then weapons, then sensors, then finally networks.

The other factor, Senator Lieberman, that is at work here is the technological opportunities that are being presented to us. We see it in the commercial sector as well as in the military technology. They have really created some wonderful opportunities for us to move faster into a capability that is represented by network centric warfare.

Senator LIEBERMAN. I think your priority list is the right order, so the question is, what can we do to make sure that the budget for next year better reflects those priorities?

Admiral MCGINN. I will give you a partial list of the types of systems that constitute our networks, cooperative engagement capability, MIDS, or LINK-16 capability, a relatively new system called naval fires network that we are just about ready to finish up a battle experimentation series with later this month. On the land side, which is so critical to support the sea-based side of our Navy and Marine Corps internet, those are examples of the types of networks that will help us to achieve the kind of connectivity of forces that we need to achieve.

Senator LIEBERMAN. Well, I hope we stay in touch there, and that you are successful in advocacy within the Pentagon on the budget process. If not, I hope that we can be of assistance to you in making the transformation, because I do think it is an important one.

In the written statement you presented, you said that your vision of transformation does not move away from the aircraft carrier, since its capabilities are unparalleled and there has been some questioning about the carriers lately. Can you discuss for a moment how the carrier fits into the vision you presented of networks, sensors, weapons, and platforms?

Admiral MCGINN. The carrier, representing as it does the centerpiece of one of our key combat deployment units, the carrier battle group, is absolutely essential to providing mobile and flexible air power from the sea.

We are continually assessing threats from all sources, whether they are mines or submarines, surface-delivered missiles, or even theater ballistic missiles to the carrier battle group as a whole piece. We think that there simply is not a substitute. If the Nation needs tactical aviation at sea, that can operate from international waters and does not need the permission of any host nation to fly combat operations or reconnaissance operations, provides a tremendous amount of flexibility across the entire spectrum from establishing a no-fly zone all the way to major theater warfare, and at the same time provides a tremendous amount of sustained fire power that can last for as long as a campaign might last. There

just is not a substitute for that, so it is a key, not just naval, but a national asset.

The principal demand for the services of these carrier battle groups comes from the unified commanders in chief (CINCs). We have a regular process of crafting a global naval force presence posture in which the individual warfighting CINCs are represented, and they negotiate with the chairman and the Joint Staff on seeing who gets these very, very critical assets, critical for peacetime forward presence as well as any type of contingency response.

Senator LIEBERMAN. I wonder if you want to take this opportunity to respond to some of the criticisms that have been directed toward the carriers. I gather the main focus is without—I am probably not doing the argument justice, but is their vulnerability. Obviously they have tremendous capabilities, as you have described, but that in an age of increasingly sophisticated missiles, for instance, a carrier may be vulnerable to attack.

Admiral MCGINN. Yes, sir. We track very closely developments of other nations, potential enemy nations in terms of their threats to our forces across the spectrum, not just aircraft carriers, and we try to stay a couple of generations of technology ahead. We do that with technology, we do it with tactics and concepts of operations, but the trends for our carriers are very positive in this regard. We are increasingly a nuclear carrier force, which gives us even more flexibility and mobility and speed and presents a tremendous targeting problem for any would-be enemy. We have a hard time ourselves, as the best Navy on the face of the earth, in trying to target moving targets ashore, and when you try to do that in a featureless ocean it becomes even more difficult.

The investments we have made in aircraft such as the F/A-18E/F, our long-range stand-off missiles, Tomahawk, and tactical Tomahawk, allow us the opportunity of moving further away from any potential threat if we choose, or if we feel it is required or prudent to do so, or to move in closer for the added volume of fire power that is represented by sortie lengths, and times to target.

We are also investing very much into our overall area defense capability against a variety of targets, our mine countermeasures, our mine warfare program, our antisurface warfare program, ASW programs, and the threat that tends to be mentioned in any discussion about vulnerability of aircraft carriers tends to be some sort of an air-delivered or surface-delivered cruise missile investments in area defenses.

The continued refinement of the SPY-1 AEGIS system, improvement of our Standard missiles, the individual ship self-defenses, are all of the things that we rely on as a second and third order lines of defense if the aircraft carrier were ever found and precisely targeted by an enemy.

Lastly, the inherent naval engineering design of aircraft carriers given their size, their tremendous compartmentization, the high-strength steel, make them tremendously robust platforms. If they were found, targeted, and some sort of enemy warhead got through all of these defenses, the ability to withstand damage is absolutely the best of any ship on the face of the earth.

I would point to the bad days of the Cold War, when we faced a peer competitor that was armed with tactical nuclear weapons,

and we had a strategy in which we were prepared to defend our aircraft carriers and to take the fight to the enemy. However, that has gotten better. We are much more asymmetric in terms of our capability to do that with any competitor, certainly in the near to midterm, and we will make sure that we stay ahead in the long-term through technology investments.

Senator LIEBERMAN. Thanks, Admiral. My time is up. I would yield now to Senator Sessions.

Senator SESSIONS. Thank you, Senator Lieberman. I would like to ask General Nyland and maybe the others about some fire support questions for the Marine Corps.

Both the Commandant of the Marine Corps and Chief of Naval Operations have stated that fire support for our forces ashore is inadequate. Many of the forcible entry missions of the Marine Corps require both naval gunfire support and organic Marine Corps artillery support.

This subcommittee has committed to and has stated the need for naval surface fire support, and has supported a number of initiatives to provide that fire support. My question, General Nyland, is what is your assessment of the Marine Corps' present and future organic fire support capabilities?

General NYLAND. Yes, sir. I would have to use the word that you use, sir. At present, it is inadequate. However, I do feel that we have programs that are in place, both organic systems, as well as naval surface fire support systems, that will take us out of this degraded status and bring us back up where we need to be. I am confident that the top-down strategy review will reveal, given the state of the world and the potential for future conflict, that the DD 21's validity and value will be certainly characterized as a necessity and a relevant element of the future strategy.

Similarly, the program we have underway to enhance the 5-inch 62-gun on the cruiser and convert those on the later models of the DDG-51 class ships all will go a long way toward correcting a deficiency we have had for quite some time.

Senator SESSIONS. What is that you just mentioned on the cruiser?

General NYLAND. The 5-inch 62-gun. On the later models of the DDG-51 it is already aboard and is expected to continue on the follow-on ships.

Senator SESSIONS. What is its capability?

General NYLAND. I might defer to Admiral Kelly to get a little bit more specific.

Admiral KELLY. If I could take that, sir, the 5-inch 62-gun which is at sea today is capable of firing our existing 5-inch inventory. It is also capable of employing the Extended Range Guided Munition (ERGM) round which is under development and which has recently completed a successful test firing, a significant step forward. We believe that program is on track now, and proceeding to field that capability.

In the Future Years Defense Program (FYDP), we will field 29 of these 5-inch 62-guns, with more to follow after that, and all told should field in excess of 70 of them when the full program is completed in about 2011, based on the current schedule.

Senator SESSIONS. I guess one of the things I would like to pursue is the ERGM round, that is, the 5-inch round that has great range. It is 60 miles?

Admiral KELLY. Yes, it projects out to 63 miles.

Senator SESSIONS. Is it correct that there have been some problems with getting that under development?

Admiral KELLY. That is correct. That is why I mentioned the recent successful test which put the pieces together and fired them not at full G-loading, but the individual components have been subjected to full G-loading. That was a significant step forward, demonstrating that we have come to grips with some of the technological challenges that we were facing.

Senator SESSIONS. General Nyland, what I would like to pursue at this point is, assuming the ERGM were to develop as it is projected to do, as I understand it, there is some concern about whether that meets surface fire support needs. Is that correct?

General NYLAND. Well, sir, I believe it is a portion of the overall fire support needs, because the real need turns out to be volume.

Senator SESSIONS. Based on your analysis of your forces in a hostile environment, you need sustained volume.

General NYLAND. That is correct, and the 5-inch 62 with the ERGM will be a complementary weapon to the advanced gun system, which is a 155-Howitzer battery equivalent. The systems altogether will provide the cohesive volume of fire and the rate of fire that we need.

Now, the ERGM is a great round, but you cannot fire it quite as rapidly as you can an unassisted round, so that is why it needs to be complementary with the advanced gun system. That would be developed on the DD 21.

Senator SESSIONS. Then, as I understand, your concern would be that there is some uncertainty about where we are with the 155 support.

General NYLAND. I think the 155, from the standpoint of the advanced gun system, makes great sense, sir, and I think it will be a tremendous weapon. From the standpoint of the 155, from our own organic fires, we are very comfortable that that program is moving ahead quite well. We had some initial difficulties.

The number 1 gun has just completed its critical design review successfully, no discrepancies. The number 2 gun has been delivered and has met all the contractor testing. In fact today it is up at Aberdeen for mobility testing and successfully fired this morning. We believe the 155, and some of the initial difficulties that we had with the spades and some of the other issues, have been resolved, and that that program is ready to move on out.

Senator SESSIONS. Admiral Kelly, first let me ask you, do you agree that the Marines need the 155 ship-based capability to adequately support the ERGM?

Admiral KELLY. Yes, we do.

Senator SESSIONS. You do not think the ERGM itself is sufficient?

Admiral KELLY. No, sir. We think the ERGM is a very important piece of the capability that we need to deploy. To get the full answer you have to look at the spectrum of targets that you have to take on. You have to look at being able to capitalize on the benefits

of maneuver warfare that we are heavily investing in in our lighter, more mobile forces.

We are trying to field a capability to take the enemy on in our terms, to use maneuver to our advantage, to have deployed on a broad spectrum of platforms the capability to, within the time line necessary, and that is an important piece of this. We need to be responsive within the time line, the tactical time line required to put a round where it needs to be in order to enable us to take advantage of maneuver warfare, so I do not have to trade marines or soldiers one for one with an opponent, so I can achieve a tactical advantage by maneuver that might cost me a lot more lives, a lot more capability, or having to field a much larger force to do it if I cannot take advantage of maneuver.

I need to field these systems on a broad spectrum of ships, and we are working to field a 5-inch 62, as I have talked about. We are working to field LASM, the land attack Standard missile capability, which will provide a very responsive, very lethal weapon that will be ready to meet those kinds of maneuver requirements. The ALAM AOA, analysis of alternatives, completes in July. The advance gun system development is underway. The lessons that we are learning in ERGM, the 5-inch 62, 5-inch round we will be able to apply to the larger caliber 155 round.

We are also working with the Army to make sure that we take full advantage of learning the lessons that they are learning from the development of their guided projectile program. We do not want to lose sight of the fact that we also have a very critical requirement for close air support capability, which comes not only from the Marine Corps indigenous aircraft capability, but also from tactical air.

Senator SESSIONS. My time has expired, but I just wanted to follow up a little bit there. The 155 capability under our present configurations and plans is only viable on the DD 21.

Admiral KELLY. It will be fielded on the DD 21, that is correct.

Senator SESSIONS. That is your only plan at this time, to bring it on?

Admiral KELLY. That is correct.

Senator SESSIONS. It does not appear to be suitable for placing on the current ships.

Admiral KELLY. The plan right now is to field it on DD 21, and we believe that is the correct way to do it. I cannot tell you and would have to check for the record whether or not it is feasible to field it on another ship. Arguably it would be, however. I am not sure. You would have to do alterations, et cetera.

Senator SESSIONS. I hope that we can deal with the ERGM. It seems to me to be a potentially wonderful weapon, and at a cost of \$15,000—or where are we now on the estimated cost of each round?

Admiral KELLY. I would need to take that one for the record for you.

[The information referred to follows:]

The 155mm Advanced Gun System (AGS) is being competitively developed as an integral part of the *Zumwalt*-Class Destroyer (DD 21) acquisition strategy. The DD 21 Alliance, in coordination with both the Blue and Gold teams, selected United Defense Limited Partnership (UDLP) as the prime contractor for the AGS design and development.

The 155mm AGS, with “fully automated” ammunition handling system and a family of munitions/propelling charges, will achieve ranges of up to 100 nautical miles. *Zumwalt*-class destroyers will have two AGS gun systems capable of independently firing 12 rounds per minute from separate automated magazines, which will be below deck. Each ship will be capable of storing 1200–1500 rounds—a magazine capacity sufficient in size to meet USMC operational requirements. With AGS, DD 21 will have the ability to deploy a high volume of precision-guided munitions with significantly improved ranges, accuracy, volume, firing rates and response times compared to the current generation of Naval Surface Fire Support (NSFS) systems.

The AGS with 600 Long Range Land Attack Projectiles (LRLAP) the minimum requirement, will weigh approximately 330 metric tons. DD 21 will have two of these for a weight of 660 metric tons. In order to accommodate this significant load, DD 21 has been designed as a total ship system with gun placement a primary consideration in the ship architecture. The 5⁷/62 caliber Mark 45 Mod 4 gun with 232 ERGM rounds and 210 conventional rounds being put into service now weighs approximately 61 metric tons. Due to the large increase in weight, it does not appear to be practical to install an AGS on any existing platform without significant ship modification. However, a detailed naval architecture study would be required on each ship class to determine the feasibility of such an installation.

Senator SESSIONS. But it is in the range of 15?

Admiral KELLY. I believe that is correct.

[The information follows:]

The Extended Range Guided Munition (ERGM) program is still in development (pre-Critical Design Review (CDR)), and currently has a range for estimated Average Unit Cost (AUC) for the first 24,000 production units of \$28K to \$48K. The quantities being procured per year and the associated learning curve can cause large fluctuations in the estimated AUC. In addition, this estimate does not include:

- Results to be gained from Army-Navy precision-guided munition efforts to leverage commonality across the ERGM, Excalibur, and Advanced Gun System (AGS) Long Range Land Attack Projectile (LRLAP) Programs
- Efficiencies to be realized from Raytheon's Design for Manufacturing and Assembly (DFMA) efforts ongoing as part of the development program; estimated up to 10 percent reduction in cost
- P³I efforts to reduce unit cost and stimulate competition
- Low Cost Alternative Guidance Electronic Unit development with Charles Stark Draper Laboratories; potential 10 percent to 20 percent reduction in cost
- Competition Factor—Competition may further drive down the cost in production.

Within 60 days after the CDR the contractor is required to provide the Program Office a price for the first 80 Low Rate Initial Production rounds. That information will give more insight to the cost of the ERGM round.

Senator SESSIONS. Compared to the million-dollar Tomahawks, the ERGM is something that could be very valuable. One of my concerns was what General Nyland suggested that that does not provide continuous fire power that can hold the enemy's head down while Marine Expeditionary Units and combat units can maneuver effectively. Other than that concern are there other concerns about your forces in a combat environment, gaps that you think are necessary to protect you and allow them to maneuver effectively?

General NYLAND. Not specifically gaps, but perhaps reduced capabilities. Our pace of modernization has been slowed over the last 10 years, where in fact modernization and infrastructure often have been the bill-payer for current-day readiness. While we have plans for many of the systems I mentioned in my opening remarks, their initial operational capability arrives in about the time frame 2008.

Regrettably, the pace at which we purchase them, many of them, do not finish showing up until perhaps 2016 for the MV-22 or 2021 in the case of the Joint Strike Fighter. In my mind the better

course of action would be the investment to pull that full operational capability to the left, thereby providing the Nation the premier enhanced expeditionary force that much earlier, as opposed to less economic rates of purchase and drawing out the total modernization of our force, sir.

Senator SESSIONS. Thank you. If we purchased it more rapidly it would actually be cheaper per unit than drawing it out?

General NYLAND. Yes, sir, absolutely.

Admiral MCGINN. If I could, Senator Sessions, on that point. I would like to emphasize for the record that we need to do a better job at funding all of our programs at economic order quantity, particularly our weapons programs. Due to the strains in the budget created by a higher bill for readiness and manpower, we have had to sacrifice the rate of modernization, which has caused us to in many cases keep programs barely alive or viable, but well below the level of production that would be described as an economic order quantity.

Senator SESSIONS. That is the death spiral that has been referred to?

Admiral MCGINN. Yes, sir.

Senator LIEBERMAN. That is why we have a tall order ahead of us, and why we await the result of the strategic review and the budget proposal that is going to be made so that we can try to right the imbalance that has existed.

It is one thing to talk about transformation, but if your modernization budgets have been as constrained as they have been, for reasons that are understandable, then there is a lot of transformation that needs to be done. To make it more than either rhetoric or appealing plans we have to give you the money to do it, and we have to convince everybody here in Congress.

Admiral, we have authorized, and Congress has appropriated, for the SH-60 Seahawk remanufacture program. I have heard there may be some feeling within the Navy that remanufacture is going forward in a way that is more expensive than anticipated. Is it correct that you may be thinking of buying new?

Admiral MCGINN. Yes, sir, it is, and I would like to call on Admiral McCabe, the Director of Naval Aviation Warfare, to give you a more detailed response.

Senator LIEBERMAN. I notice General Nyland moved the microphone over to Rear Admiral McCabe as I began that question.

General MCCABE. Senator, thanks for that question. I am happy to talk about the helicopter force. I would like to broadly talk about it first. Our helicopter master plan intends to use the MH-60, then the 60-R, to move from eight type-model-series to two type-model-series. In addition to that, there is a fleet study going on right now that we would be happy to brief you on when it finally is approved that also provides for more helicopters in the battle group and adjusts where they are on the carrier and the numbers of helicopters in the total force.

Ideally, we would like to buy 241. That is the requirement, I believe, for the 60-R. It is a very important helicopter to us. We believe we cannot fight well in the littoral battle space without an updated and modern helicopter force, though there have been problems with integration of the mission systems in the 60-R. If I were

to attempt to place blame, I could not. Both contractors and the Government I would say would share equally in that.

We have through Naval Air Systems Command (NAVAIR) undertaken a detailed technical review, which is completed, of one of the contractors. We will receive a brief on the second one, which is almost complete. In the context of looking at the program, which in effect has slipped about a year, it has become clear to us—and we asked the question last fall—it looks like the cost of a remanufactured helicopter is moving close to the cost of a new one.

Talking briefly about the remanufactured helicopter, it would reuse the dynamic components currently on the helicopters when they come from the fleet, so you would replace those through the normal IL&S fleet replacement program which you have seen come over which we need supplemental money for again this year.

As we looked at that and factored that into the total cost of the program, the cost of a new helicopter started to become much more attractive to us. In addition, as we pull aircraft from the fleet, that creates a bath tub in the fleet in terms of available aircraft, and as you were remanufacturing the helicopters you would have a bath tub of about 5 years, where each year you would be about 40 under what you needed.

The new helicopter program, if we went in that direction, we would have the benefit of not having a bath tub. In addition, you could actually produce new helicopters more rapidly than you could remanufacture them with the line fully operating. For all of those reasons, and in addition to the fatigue life on the helicopters, which we are looking now at studying and extending their fatigue life from 10,000 to 12,000 hours, it made sense to us to start to look at that new helicopter program as a total investment program.

We have completed our review and made recommendations, and I think you will see the result of that when we finally get a chance to see the 2002 budget.

Senator LIEBERMAN. So we may see it in the so-called budget amendment, the detailed proposal for the 2002 budget? Okay, that is great. Thanks for informing us of that.

General Nyland, obviously we are all sad about the loss of life in the V-22 crashes. The full Armed Services Committee held their hearing recently and heard from the panel that is reviewing the V-22 program. I think the full committee is going to come back to that later, but even if the Defense Department decides to proceed with the program, replacing the CH-46 fleet I gather could be delayed by several years. I wanted to ask you about the extent to which you feel the Marine Corps can rely on the CH-46 to meet the operational requirements in the interim. If you could, describe what you will need to ensure that that fleet will support operating squadrons in the interim.

General NYLAND. Yes, sir. The CH-46 has been a very venerable work horse for us, and if we have movement to the right in the MV-22 we fully expect the 46 will continue to fulfill our meeting the assault capabilities. To that end, we will continue to look for ways to enhance and upgrade its performance. We have money in the current budget, for instance, that will enhance the engine's performance. That was an area that needed some work.

We are okay as far as fatigue life on the basic air frames. Many of the aircraft have been through SDLM, scheduled depot-level maintenance repair. The others are inspected annually inside a 30-month cycle that would require them to go back to the depot-level maintenance if that is required. I think we are comfortable that we can continue to work our way forward and maneuver with the CH-46, but obviously we will not be doing it with the same capability and tactical flexibility that will be afforded by the MV-22.

Senator LIEBERMAN. OK. Well, we will see some more details there, too, I presume, in the budget coming over in June, about what you need to keep that as good as you can have it.

General NYLAND. Yes, sir, and we are, in fact, right now—the Department of the Navy, as well as OSD and industry—are working very hard to take a look at what the Blue Ribbon Panel has determined to be the way ahead, and put that in place as far as the rest of the machine, and I might even defer to Admiral McGinn, who is a member of that executive committee that met just as recently as last week to talk about the way ahead.

Admiral MCGINN. Actually, Senator Lieberman, it was Tuesday of this week we had our first executive steering committee for the V-22 program. The intent is to bring together the Marine Corps, Navy, Air Force Special Operations Command and the industry teams in order to decide the best way ahead to get the V-22 program back on track to make sure that we can address all of the discrepancies identified in prior testing, both technical and operational, up to this point, and to address all of the issues raised by the mishap investigation board from that tragic accident in December as well as the one last April in Arizona. It is also to carefully go through the recommendations of the Blue Ribbon Panel to ensure that we take all of those into consideration and put together a program that recognizes the need to get on with the replacement for the CH-46 fleet in the Marine Corps, but one which does not get so driven by the clock that we do not do it right.

Senator LIEBERMAN. Thanks. I wondered, with the indulgence of my colleagues, if I could just ask one more question, which is a large question. I would ask you to give us a short answer, but you are more than welcome to give us more in writing. This is a review we have asked you to do on the 30-year shipbuilding program and the impact on American shipbuilding that naval acquisitions will have on the health of our shipbuilding program in general.

We had an earlier hearing in which there was a lot of anxiety expressed, that I shared, about the fact that the numbers are rapidly taking us down below 300. My question at this point is, just for a quick status report, and to learn what extent the work is that you are doing on that report, integrating both the Navy and the Marine Corps into the QDR and the strategic review that Secretary Rumsfeld is performing.

Admiral MCGINN. I think, Senator Lieberman, that the shipbuilding study that has been directed as part of the QDR and the top-down review will take into careful consideration the shipbuilding industrial base study that was directed previously. I will personally ensure that it does, since my organization is involved with that, as well as the acquisition side of our Navy staff.

Senator LIEBERMAN. I appreciate that. As you may have noticed, power moves quickly here in the Senate. I have to go, and so I am pleased to leave you in control, Senator SESSIONS. [Laughter.]

Senator SESSIONS [presiding]. Senator Bunning, we are delighted to have you with us.

Senator BUNNING. I am sorry I am late, but I did have an opening statement that I would like, with unanimous consent, to be put in the record.

Senator SESSIONS. Without objection, it will be made a part of the record.

[The statement of Senator Bunning follows:]

PREPARED STATEMENT BY SENATOR JIM BUNNING

Thank you Mr. Chairman. Gentlemen, I would like to join my colleagues in welcoming you. We all appreciate your lifelong service to this country.

The state of our sea services is something that greatly concerns me. The United States has always been a maritime Nation and this has not changed. It is vital to our national security that we remain capable of projecting power to any point on the globe. Our naval forces are a vital part of that capability. They provide a flexibility not found elsewhere. I am looking forward to working with all of you to ensure our naval forces can meet our Nation's national security requirements.

Senator SESSIONS. I just would like to pursue some concerns I have about the P-3. It has made a lot of news lately.

Rear Admiral McCabe, while the upgrades are ongoing, and continue for the P-3, the viability of the structural integrity appears to be less certain. Starting in fiscal year 2003, the P-3 and EP-3 aircraft will start to reach their fatigue life. Last year the Government canceled a sustained readiness program, and we have been informed that instead of attempting to extend the service life of the P-3 a new platform, the multimission maritime aircraft, is scheduled to enter the component advanced development phase in fiscal year 2002, with procurement scheduled to begin later in the decade.

My question first would be, with the loss of P-3 aircraft due to service life in the not-too-distant future, does it make sense to back away from previous plans to extend the life, and do we have money to fix them, and can they be fixed? If we do not have the money to fix them, how do we have money to buy new ones? Maybe you can give us your insight into where we are with the P-3, which is a critical part of our defense structure.

Admiral MCCABE. Yes, sir. Particularly from our viewpoint, we have a strong support in the Navy for the P-3 family and going to MMA. Let me talk you through this. I think we can make some sense of it.

We talked about the SRP program, which was canceled. There are still some airplanes. We finished with the airplanes that are in Greenville, Texas, yet 10 remain to be finished in Greenville, North Carolina. We did, in fact, cancel the SLEP program, the service life extension program, and then we took a hard look at MMA.

Senator SESSIONS. Now, in not extending the service life, where does that leave you with the dying off, or elimination of the aircraft?

Admiral MCCABE. Yes, sir, Senator. What we did continue was the service life determination program called SLAP, which is ongoing right now, and will determine two things that are very critical

to us. We will take an airplane to full life expectancy, and will have the result of that back when we fatigue-test the test unit to failure, in 2004. We will also have back in 2003 a particular, precise service examination program called SSI, which is focused on those parts of the airplane that are the fatiguing elements that need to be addressed.

We got a good look at the airplane in SRP, and in certain areas, came in worse shape than we expected.

As a result of all of these factors, we need to finish the SLAP and do the SSI. We are looking at the fatigue life of the airplanes, because you are correct, in the 2005 time frame the EP-3 family starts to have some problems, and then in the 2007 time frame the P-3 program starts to have some fatigue problems as well. If we do not address those problems, we will not be able to get into the MMA IOC time frame, so this is a two-part program. Taking care of the fatigue element of the P-3s has been acknowledged as something we have to do.

The second part of it is, we moved the Initial Operational Capability (IOC) for Multi-Mission Maritime Aircraft (MMA) from 2015 up into the 2010, 2012 time frame, and because we did that, it changed some of the expectations of what we needed to do to the fleet of airplanes.

Some other things became clear to us in the past year. Much like we were looking at the 60-Rs I discussed earlier, we looked at the remanufacture in a parallel way with the P-3, and determined that the cost of doing that was proximate to buying new P-3s. Then, if you factored in commercial derivatives, the total cost of ownership savings and some acquisition profiles that you could get, that the cost of all of them were the same. Since we have had trouble with remanufacturing being successful there, and we are stressed with old airframes and operations and support (O&S) cost, we moved to accelerate the MMA program and began to focus on a move in the AoA, toward studying very seriously commercial derivatives, which will be finished this year.

Also part of that is the development of long-duration UAVs, which we believe is also part of the future solution for MMA. We see our future in the next years, the MMA/AoA finishing, and will be determining our path for that, so we will need to do a couple of things. We will need to precisely look at MMA and what we want to do, which we are currently studying and also look at the service life issues for the P-3 family, the SSI inspections that I spoke of, specifically focused on certain fatigue elements.

In answer to your question about the funding, there is no question about it. We believe that there is some attractiveness looking at the commercial potential for this airplane in particular. We also have engaged in conversation with the Air Force. They are interested in common wide body.

We might be interested in different air frames, but in common systems between the two services in terms of what we would like them to do, we have some great fiscal challenges out in the 2010 time frame for this committee's interested airplanes, helicopters, strike fighters not included, the E-2s as well as P-3s. We are looking at a lot of serious discussions in our area of the world about major program adjustments, possibly force structure, other ways of

uniquely financing or making attractive the commercial side of this for this kind of airplane.

We acknowledge that it is a challenge, but we believe that by doing all these things we will end up in the long run with a better package for that particular mission area.

Senator SESSIONS. Have you made a decision that the life expectancy of these P-3 aircraft are not significantly extendable, or at least is not economical to do so? Is that a firm decision you have reached?

Admiral MCCABE. We believe that if we cannot introduce the MMA by the 2010 time frame, that we will suffer a degradation in the inventory in P-3s with some operational impact. We believe we can extend them out to that time frame with this series of focused fatigue inspections and improvements, and keep the cost under control while we are investing in the new aircraft.

Senator SESSIONS. That is a pretty rapid drop-off after that point.

Admiral MCCABE. Yes, sir.

Senator SESSIONS. Like the KC-135 that has been out for 40 years, which are being refurbished and continuing to be used. Do you not see that is possible for the P-3?

Admiral MCCABE. Well, this also goes into O&S cost. We spend almost—I could get you the actual number if you wanted it, but somewhere between \$800 million and \$1 billion a year on O&S costs on the P-3s. Ideally, if we were to go to a commercial derivative, just in theory, to discuss that, we would like to try to generate the O&S cost savings from that very quickly. It would make sense to move out of the P-3 and move into the other aircraft more on the economic order quantity to get the benefit of that kind of a move. We could always extend the airplane out further, but we think it would be a better investment to go in a different direction.

Senator SESSIONS. You think there are commercial aircraft that are suitable?

Admiral MCCABE. That is the challenge of the AoA. Secretary Danzig asked the AoA to focus on commercial derivatives in addition to what they are looking at, so we are looking at a variety of commercial derivatives and existing potential candidates.

Senator SESSIONS. I think you are asking the right questions. That is the real critical point. This aircraft goes out of inventory. We could see the end coming, and I will just ask this, simply, if you can tell me. Is this an unexpected expense? Is the fact that it could not be refurbished and extended, does that mean that we have now greater long-term expenditure than we expected just a few years ago?

Admiral MCCABE. No, sir. I think it is quite different. We started to focus on our aging aircraft and what they cost us, and it is between 10 and 14 percent growth a year in operation and support cost for the aging aircraft.

About 8 percent of that we believe we can demonstrate due to aging aircraft and not just the cost of operating. We see with remanufactured airplanes you tend not to get the benefit of new materials and better reliability, and we really are pushing for better reliability both on the airplane and the weapons system. There are parts of the P-3 weapons system that are, frankly, not very reli-

able, and so we would be able to upgrade the weapons system as well.

Senator SESSIONS. Thank you, Madam Chairperson.

Senator LANDRIEU [presiding]. Thank you, Senator. Let me ask Senator Bunning if he would like to take his turn, and then I will go after that.

Senator BUNNING. Thank you very much. This is my first. I was not here earlier.

Senator LANDRIEU. Go right ahead.

Senator BUNNING. Rear Admiral Kelly, I have some questions for you. I understand your office has reviewed the Sea RAM concept and the Royal Navy Sea Trails. Do you believe Sea RAM is a good way to enhance force protection in the fleet?

Admiral KELLY. We think that the Sea RAM program is definitely worth exploring. This combines the sensor suite from the close-in weapons system with the RAM launcher. RAM has achieved a wonderful performance record. I believe the most recent tally is 160 successes out of 165. The biggest problem I have with RAM is it is shooting down all my targets.

We see potential there to help us address future requirements and to put together, out of those two components, a very capable, stand-alone, self-defense system, so we are working closely with the British to monitor the testing they are doing. I had meetings with my counterparts in London last week, in which we went through the status of the program. We will continue to monitor their nonfiring tests, which they will complete this year, and then we will step back and look at the results of those and decide on the best path to proceed ahead.

Senator BUNNING. Admiral, in March of 2000 Admiral Clark sent a message stating that the Phalanx Block 1B was needed in the fleet to provide force protection against terrorist threats. Obviously, we all know what happened on October of 2000. We had the attack on the U.S.S. *Cole*, demonstrating the damage that a small boat loaded with explosives can do to a major naval combatant. Do you agree with Admiral Clark's statement? Do you consider this need urgent?

Admiral KELLY. Yes. I think that a close-in weapons system (CIWS), 1B version, combines very real improvements in air defense capability. It also provides a significant antisurface capability, enabling us to engage small boats, those kinds of things which potentially could be used by terrorists, or could be used in just surface warfare, which we had not had before.

We are fielding the close-in weapons system 1B, and we need to continue to do that. We are also reviewing whether or not it would be wise to move to 1Bs for the overhauls we do on other mounts, and we are looking at trying to do that.

We have roughly 359 close-in weapons systems at sea today on our ships, by far our most popular, significant combat system on our surface ships. We are trying to balance the cost to modernize, to move to the 1B, with the growing overhaul requirements that we have for our existing close-in weapons system mounts which are aging, and which need to be overhauled in order to assure their readiness. That is a balance we are going to have to strike within

the assets we can put toward this program, but clearly there are real benefits from close-in weapons system 1B.

Senator BUNNING. This will be my last question, Madam Chairperson. A recent GAO report identified that fleet Phalanx systems suffer from a lack of funds for timely overhaul. It has left the fleet with reduced readiness, and degraded force protection. The frequency of overhauls recommended by the Navy, an in-service engineering agency, and the original equipment manufacturers are being exceeded. Do you agree that maintaining force protection readiness by performing needed Phalanx overhauls is important?

Admiral KELLY. Yes, Senator, I do. I agree with the remarks that were made. As I mentioned before, we have a very large inventory of these mounts. These mounts form the final layer of defense for our ships.

It is important not to look at the close-in weapons system capability alone, through a soda straw. We have to look at the combined capability, the overall defensive capability that we have at sea on these ships. We have shortfalls that we need to address in close-in weapons system overhauls. We are working with the fleet to ensure that we overhaul those mounts which they feel are most urgent, but we need to devote additional assets to do that. I agree with that statement.

Senator BUNNING. Can you answer the question? Do you agree that maintaining force protection readiness by performing needed Phalanx overhaul is important?

Admiral KELLY. Yes, sir, it is.

Senator BUNNING. Thank you.

Senator LANDRIEU. Let me just follow up that line of questioning with a little bit broader question for you and anyone on the panel that would want to answer it. Can you just each maybe briefly describe to the subcommittee the actions you are taking for improving our readiness posture for responding to unconventional threats? Obviously the *Cole* is one unfortunate and recent example, but Admiral, can you bring us up to date on that?

Admiral MCGINN. Yes, ma'am. When the CNO came over some weeks ago and testified at the *Cole* hearing, he outlined a whole series of initiatives that we have undertaken, along with the fleet commanders, in order to improve our posture to protect ourselves better against unconventional attacks, or terrorist attacks.

One of the key parts of that, of course, is to improve our ability to understand the potential vector of an attack, improve our intelligence capabilities, and also to get the right blend of technology and manpower to our ships and to our naval stations here in the United States, as well as, in particular, abroad, in order to present a more formidable target for any would-be terrorist group. This takes the form of greater investments in sensors for seaborne attack, for pier-side attack, investments in fire power in the form of personal side arms for security force personnel, as well as in ships, small caliber guns with a much higher accuracy range and rate of fire.

I will defer to my other shipmates here to amplify on that in their specific areas, and I would like to start with General Bill Whitlow, our Director of Expeditionary Warfare.

General WHITLOW. Good afternoon, Madam Chairperson. We are looking very closely with the other services at a myriad of systems, some of which have already been spoken to. I will not belabor those points, but in the expeditionary warfare arena we basically have many of the force protection systems inherent in platforms, for instance, amphibious readiness groups, when they deploy with marines and aviation assets on board.

What we have done is encourage those operational units to look at their tactics techniques and procedures to enhance the systems they already incorporate. For instance, they have a procedure using Marine helicopters, Cobras to be specific, when they do high-threat area transits. Those helicopters and the Harriers on board will be in an increased state of alert, or even airborne, watching for anything from small boats which could provide a threat, all the way up to more sophisticated threat targets. Those are the areas we have looked at.

We also are exploring in depth less-than-lethal measures. This would be Navy-wide. For instance, in foreign ports, or perhaps in times of increased tension, friendly ports, or Continental United States (CONUS) ports, there could be less-than-lethal types of systems that we may be able to in the future put around ships. This would mean you will not have to ratchet up, from "stop or I'll shoot you" to "stop or I just have the capability to stop you," very much as police departments do with their weapons, rather than use their sidearms, use pepper spray or other systems. We are exploring that in depth, and as soon as the CNO's review is complete we will probably begin to field some of these systems that are more pertinent to specifically Navy-related issues.

Senator LANDRIEU. Would anyone else like to comment?

General NYLAND. Madam Chairwoman, if I could go just a little further for the purposes of the Marine Corps, as General Whitlow has indicated, those units that are aboard the ARGs do a great deal of work in this area. In addition, we have the Fleet Anti-terrorist Support Teams (FAST), which we have under the control of the fleet operational CINCs, which makes them available at their calling to come and assist in this.

We have undertaken a program in the Marine Corps to expand the basics of their training into every battalion in the Marine Corps so that now a battalion that is not necessarily associated with the marine expeditionary unit but, say, is perhaps on deployment to the Western Pacific, or may just be out somewhere in the continental United States training, would have this initial capability for some antiterrorism capability.

In addition, down at our warfighting lab we are looking at some of the nonlethal devices that General Whitlow mentioned. One that has been in the press here in recent months is the vehicle-mounted active denial, which is sort of a skin-warmer. There are some tests going on now to make sure that is all it does do, and that there is not any permanent damage, and then, of course in the aftermath we continue to work with our Consequence Biological Incident Response Team should that become necessary.

So we, too, are pursuing, as Admiral McGinn indicated, ways to know where we might look, the intelligence and the sensors, electronic devices, as well as these other vectors.

Admiral MCGINN. If I could perhaps close out this answer, Senator. We acknowledge the attack on the *Cole*, this is a clear and present danger to U.S. forces worldwide, and we are not waiting for any type of program to deliver capability. We have moved out very, very smartly in enhancing our level of force protection and antiterrorist posture.

The fleet commanders have been particularly active in this, with the reallocation of personnel into the force protection force and the training aspects of it. In virtually every aspect of our deployed and nondeployed life we have brought force protection and antiterrorism tactics and capabilities right to the very top of our priority list.

Senator LANDRIEU. I appreciate that. For the record, that is good information to get, and we want to continue to work with you on this subcommittee in that regard. Let me ask one other question. Another issue that this subcommittee has dealt with now for many years, and we still sort of struggle with to try to find the appropriate response, is this idea of multiyear procurement, or advanced appropriations for our shipbuilding necessities and major weapons system purchases.

I come from State government, Senator Sessions does, many of us do. We are somewhat surprised when we get here to Washington to learn the Federal Government buys things much differently than State governments. In our experience most of the businesses we know that have capital budgets and long-term amortization of these big items for a number of reasons. It can save you money. In this case the taxpayer can also bring more stability to budgeting.

I know that there is some concern about the down side, but could you all take a moment, since I have been fairly supportive of this idea, to talk about the pros and cons you see to the various approaches that have been mentioned? I think in the tight budget situation that we are facing we are going to have to be creative and smart about how to meet the requirements that we clearly have, and this might be an answer.

Admiral MCGINN. I completely agree we need to bring stability to our funding profiles, particularly for our major capital investments.

If you look at the history of our shipbuilding and aircraft investment, there is a very uneasy sawtooth-like shape to the curve of investment from year to year, and from a business standpoint, and we hear this all the time from our industry partners. This does not make life easy for them as primes, and it particularly does not make life easy for the second and third tier vendors that they are trying to keep viable from an economic sense.

We will try anything that can be done to bring stability to funding profiles. Recognizing that there is a critical need for us to have oversight and to make sure that we do not commit ourselves to a path that we would not want to be on a few years down the road, we need to do what we can to stabilize funding for shipbuilding, for aircraft procurement, for weapons procurement, and to take into consideration the best business practices and create more capability for ourselves for the dollars available.

We are absolutely convinced, based on analysis, that we can get more warfighting capability, not necessarily by just adding more dollars, but by stabilizing whatever level of dollars are available. You see this in some of our very successful aircraft programs, the Air Force's multiyear procurement with the C-17, and the Navy's F/A-18E/F. There are tremendous savings. You actually get more aircraft for the same amount of money than you would have if it were not a multiyear procurement, so we are very much in favor of a strategy for funding that stabilizes it.

Senator LANDRIEU. Thank you.

Senator Reed.

Senator REED. Thank you very much, Madam Chairperson.

Admiral, again, you mentioned in your testimony a need for effective countermine and antisubmarine warfare (ASW) measures to protect the carriers and the rest of the battle group. Do you believe the ASW budget will be sufficient this year, and what areas would you prioritize in terms of these resources?

Admiral MCGINN. We have, Senator Reed, a Director of Antisubmarine Warfare who is not with us today because he is what we call an integrated warfare sponsor. He looks across all of the programs of the other sponsors that are with me here today, the other warfare area commanders, and is constantly assessing their individual investments, their platforms and their weapons and sensors in the ASW arena.

As a result of Capt. Jerry Ferguson's work we have a much better understanding of where we are adequately invested and where we are underinvested. I anticipate that you will find that the upcoming budget will increase that investment in overall ASW, but I want to also say that we are still not satisfied with that level of investment for antisubmarine warfare.

I just recently was out in San Diego for the fleet-run and sponsored ASW improvement program. They are doing great things in the fleet to improve training, and are devoting a great deal of time, both at sea and ashore to improving our ASW capability. We are attempting to match that level of commitment and enthusiasm in our investments in ASW networks and sensors and weapons.

Finally, before coming to Washington last October, I was the Third Fleet Commander out in the Eastern Pacific. We saw an enormous improvement in our capability to do theater ASW simply by tying together the various command and control nodes of ASW—P-3 aircraft, surface combatants, submarines, and submarine control centers ashore—by a system that we called WCAN, Web Centric ASW Network. It brought a tremendous amount of shared knowledge to the whole theater ASW platforms. That is an example of where you can leverage information technology and gain a disproportionate return in capability.

The other example of ASW investment of information technology (IT) I would use is the advanced rapid commercial, off-the-shelf (COTS) insertion program and our submarine sensor programs, wherein you do not change anything in terms of the sensor physics, you simply have a much better capability with COTS processors to differentiate between signal and noise in the underwater environment.

Senator REED. Thank you, Admiral. Let me turn to a more specific issue with General Whitlow. General Whitlow, last year the Navy restructured the integrated combat weapons systems effort, changed contractors, and for some of us it came as a surprise. In the deliberations last year of the subcommittee there was no additional request for funds or suggestion that this program was in that particular situation.

Could you describe how the program has changed over the last several months, and also perhaps indicate why there was not a warning of the program's difficulties?

General WHITLOW. Well, Senator, I cannot indicate why there was not a warning. I will have to take most of that for the record, because it is very complex. I can tell you we have several of our programs under review, by and large for many of the reasons Admiral McGinn just stated, how we look at things.

The new leadership in the Navy has forced us, rightfully so, to review how we are doing, whether it is mine warfare or antisurface warfare, and to integrate accordingly, rather than stovepipe it in, also whether it is procurement or the combat operations system. By and large that is what has been generated. However, I am not aware that the committee was not notified as such, but I will find out and get back to you for the record.

[The information follows:]

Since the contract award in April 2000, the prime contractor (Raytheon) missed several cost and/or schedule milestones, which led to a \$7M cost variance and a 35 percent cost overrun in December of 2000. NAVSEA (PMS-490) issued a stop work order, and the program was restructured to transfer the ICWS integration role from Raytheon to the government (PMS-490) and subsystem development to Lockheed Martin and NSWC CSS Panama City.

A series of briefings were held both within the Navy and externally to select Congressional Staff. The staff of Representative Kennedy (D-RI) was briefed on 13 December 2000. On 22 January 2001, PMS-490 briefed ASN(RD&A) (Acting) and obtained concurrence to transfer System Lead and TSS functions from Raytheon to Lockheed Martin. In March 2001 PMS 490 briefed ASN(RD&A) (Acting) and obtained concurrence to transfer Detect and Engage functions to CSS. Professional Staff Member briefings were conducted for the SASC on 16 May 2001, and the HASC on 24 May 2001.

Subsequent to the Seapower hearing Navy staff (N752) contacted Professional Staff Members Gary Hall and Creighton Greene and Senator Reed's MLA, Elizabeth King. They indicated that no further action is required.

The Navy regrets that some key Congressional contacts may not have received timely information concerning this re-structured program and the causal factors that created the requirement to change. We will work to ensure Congress receives timely information on program status.

Senator REED. I would appreciate that, General, very much.

Let me also raise another issue within your area of responsibility. I understand there may be a problem with one of the assault breaching systems. Apparently the problem is not whether the system works as advertised, but whether the system's performance will meet the needs of the fleet. This could be a situation where the original requirement was not validated. I assume this might be one of those areas that you alluded to and questioned seriously. Could you elaborate on this? I believe it is Sabre.

General WHITLOW. Yes. The Sabre distributed explosive technology (DET) system is a DET-related and net-related explosive system that is designed to be launched from the air cushion vehicle, the landing craft, or LCAC, if you will. Over a year ago the

Navy decided, in concert with the Marine Corps, to take a very close look at this entire system for several reasons, which, if you will afford me the time, Madam Chairperson, I will attempt to explain to you.

The first reason is the sheer size. We have a deficiency in overall assault lift across the Navy. The sheer size of this system, it was believed at the time, precluded it from being an operationally capable system, even if it worked, and at that time it had not yet gone to operational evaluation (OPEVAL). I will get to that in a few moments. We decided during a fleet exercise which just concluded this spring—Colonel Blitz out on the West Coast—that we would do an operational concepts exercise to see if we could literally move this behemoth of a system from storage, to the ship, to the landing craft, to the beach, in order to address the mine threat in the very shallow surf zone area, which has some physics-related challenges to it.

In the meantime, during last October, I believe, early October, the Navy Operational Test and Evaluation Force (OPTEVFOR) did an operational test off of San Clemente Island with the same system. We are currently awaiting the final report of that now.

This summer both the Navy leadership, through the NROC, which is Navy requirements, and the Marine leadership will look at their various aspects of this system when we get the report from the OPTEVFOR folks, as well as the Center for Naval Analyses, who has done the study on how the Sabre DET system would be moved. Once we have the results from those reports, both services' leadership will take a look at it, and then we will review if we want to go forth.

For instance, it is thought that the system will take up so much space aboard amphibious shipping, if you will, from which it will have to be deployed, that you would not be able to carry anything else. You might be able to clear a lane, but why do that? There would not be anyone coming behind you, because all of that space would have been taken up.

That may be a mite of an exaggeration, but that is what we needed to look at. It has to fit. That was the marine concern. There are also some fleet operation concerns with this system. It is launched from an LCAC. The LCAC has to hover in the surf zone to launch this system. An LCAC does not hover well. It does not have an automatic pilot.

Now, the phase 2 of the LCAC SLEP will have a navigation system and the hover system to allow it to operate in this regime. From there, we should be able to go forth. However, there were a myriad of questions that really needed to be answered throughout, such as the concepts of employment, to include the fusing. We are still having development, and some fusing issues with this system.

So we thought it was time to take a review, a strategic pause, if you will, and thoroughly look at the system, rather than have a behemoth system that frankly is not deployable. That is exactly where we are, Senator.

Senator REED. Thank you, Madam Chairperson. If I may ask one additional question, briefly. If this system is scrubbed, and frankly it is not particularly a glowing report you have given on its potential, do you have anything else?

General WHITLOW. Yes, sir. In the meantime, I have transferred funds to the Marine Corps Systems Command to review another option, which we stole basically from an ally, and that is a very unsophisticated mechanical option. It is basically a marine amphibious tractor, remotely controlled, which costs about \$1.92 to do with a mechanism on it, so when it comes ashore it can sweep the beach and continue up to and through the high water line.

We do not know if this will work or not, but I will tell you, one of our good friends and allies is exploring the same option at a much-reduced cost.

The reason we decided to look at that is, the Marine Corps will very shortly have an excess of amphibious tractors available because of the development of the new amphibious tractor, so that could be an option.

Senator REED. Thank you. General, thank you very much. Thank you, Madam Chairperson.

Senator LANDRIEU. Thank you. Senator Bunning has another round, and then we will take a few more questions.

Senator BUNNING. I do have a couple of questions for General Nyland. In your prepared statement you said that the Marine Corps needs an increase of \$1.8 to \$2 billion a year for the next 8 to 10 years in order to meet tomorrow's challenges and to maintain the expeditionary force and readiness that our Nation requires. What in the world are you talking about?

General NYLAND. Yes, sir. What that figure is designed to do was to address the pace of modernization as we have been experiencing over the last few years, which is quite slow. We looked at readiness in the Marine Corps across four pillars; the marines and their families, the legacy systems we operate, the modernization in the new systems, and the infrastructure. What that \$1.8 to \$2 billion across that period of time will do—

Senator BUNNING. That is annually, now?

General NYLAND. Yes, sir—will correct all the deficiencies in all four of those pillars. Many of the things that we already have, had a vision that we have needed on the example under the modernization. As I discussed a little earlier, a lot of these start to show up in the year 2008. Many of them do not complete showing up until the year 2016, or further.

The object of the \$1.8 to \$2.0 billion across that period of time are all executable programs that will take the full operational capabilities of the modernization piece, as well as the marines and their families and the infrastructure of the bases and stations, and modernize it all to the absolute best that it has ever been.

Senator BUNNING. OK. It is my understanding that we are going to have a supplemental in the vicinity, presently the vicinity of \$6 billion for DOD. Are you talking about some of that being part of the money, or are you talking about this being in future budgets?

General NYLAND. Sir, I am speaking in a future budget.

Senator BUNNING. So the Marine Corps is going to need \$2 billion approximately, annually, in the DOD's budget.

General NYLAND. To speed the pace of modernization and reach that enhanced capability sooner.

Senator BUNNING. Sooner than what?

General NYLAND. Sooner than it is currently programmed. Currently, if we look at the way we are purchasing things, modernization is extremely slow, often becoming the bill-payer for legacy systems in current readiness. This is designed to speed up the Marine Corps of the future, rather than waiting for the last of it to come in in slow pieces, anywhere from 2015 to 2020, and bring all of that to the left, and provide that enhanced expeditionary capability for the Nation sooner.

Senator BUNNING. I am trying to understand if we are making up what we are behind in a supplemental of \$6 billion or so, trying to catch up. What will your \$2 billion extra per annum in the regular budget do to the overall DOD budget? I know we do not have one yet, but we are doing the bottom-up study. If it is going to be \$2 billion for the Marine Corps, what will it be for the Navy? What will it be for the Army? What will it be for the Air Force? Overall, how many dollars are you talking about?

General NYLAND. This number is based on the current structure and the current strategy.

Senator BUNNING. Just for the Marine Corps?

General NYLAND. That is correct, yes, sir.

Senator LANDRIEU. Senator, I do not know if this would help, but the studies we have seen across the board range from a low of \$10 billion to \$50 billion annually, and there is going to be some sort of consensus.

Senator BUNNING. We do not have a bank in the United States big enough to handle that right now, Madam Chairperson.

Senator LANDRIEU. I know, so we are going to have to come up with some interesting arrangements.

Senator BUNNING. Interesting funding.

Senator LANDRIEU. But that is what the studies generally show.

Senator BUNNING. Thank you, General.

Senator LANDRIEU. Senator Sessions.

Senator SESSIONS. Thank you. Admiral McGinn, I appreciate your comments about networks. Earlier this year, I was in the Persian Gulf, onboard the *San Jacinto* when they talked about network systems and the need to upgrade those, and the possibilities that could be achieved with upgrading. To reiterate, do you think you are on track for that? Are we not doing the things we need to do to get that network where you need to be?

Admiral MCGINN. The technology is available today, Senator, to greatly upgrade our capabilities by networking, but our investment in those networks and in those sensors is slower than what we would like to have. It is frustrating for all of the services, and I will speak for the Navy, obviously.

Senator SESSIONS. Here again you are using legacy system moneys to keep operating. You are not able to go to the higher level of modernization you would like to.

Admiral MCGINN. I have used the term, perhaps overly loosely, venture capital. At the same time we are being presented with technological opportunities that truly increase our capability, increase our operational availability, and lower our cost of ownership we are unable to free up the dollars to invest in that technology because of the demands of increasing manpower bills, increasing

bills for operations and support and maintenance of the legacy forces that we have.

Admiral McCabe used the example in naval aviation of on average anywhere from 10 to even as high as 14 percent per year increase in the cost of ownership of an aging fleet. That is caused by things wearing out. That is caused by traditional vendors going out of business because of a much smaller business base trying to maintain aging aircraft.

For all of these reasons we would like to have the ability to accelerate our investment in information technology, particularly for our systems of forward-deployed networks like you saw on *San Jacinto* and in the *Truman* battle group in the Gulf.

Senator SESSIONS. Along that line, I know you are working on the multifunction radar and the volume search radar for surface ships. The goals of these radars are increased capability, lower life cycle cost and personnel cost. There have been press reports regarding some difficulties with these systems. Where are we? Will they be ready for the CVN-77, the next carrier, and how do you feel about the status of that? Are you committed to it still?

Admiral MCGINN. Yes, sir. With your permission, I would like to call on Admiral Kelly, and for follow-up Admiral McCabe, to discuss the carrier aspect of it.

Admiral KELLY. Senator, the multifunction radar is on track. There is real hardware. You can put your hand on it. The transmit and receive module technological challenges have been worked through. We believe it will meet CVN-77. Volume Search Radar (VSR) is slave to the DD 21 competition tied to nondisclosure support restrictions that we have there. Both teams have briefed their VSR proposals to the Navy, and funding through down-select in that competition is adequate to support that program to that point.

If I could briefly return to the previous question, I think that we talked briefly about antisubmarine warfare, and this is with respect to networking. Many folks view antisubmarine warfare as a defensive effort. We need to go off that on antisubmarine warfare. Networking provides a tremendous opportunity to do that.

If we can tie together our improved capacity to monitor the environment, if we can network the sensors that we have out there, and tie them together real time, or near-real time, much as we have done with the air defense capability that we have two prototypes at sea now doing, we are going to be able to significantly improve and rapidly improve our ability to do antisubmarine warfare with the equipment we have out there right now. As we tie that equipment into the new sensor capabilities that we are going to field in the SQQ-89 and other systems, it will enable us to take back much of that antisubmarine warfare capability. I think it is one of the keys to counter the increasingly quiet diesel threat we have out there.

Senator SESSIONS. Just to follow up a bit there, on the new radar systems, this will reduce the moving parts, and reduce personnel. Will it pay for itself in reduced costs, or is it an upgrade in the capability that you are seeking?

Admiral KELLY. Senator, it will significantly upgrade capability and have substantially lower operation and maintenance costs. At

what point would it pay for itself? I have to take that for the record for you.

[The information follows:]

The Multi-Function Radar (MFR) and Volume Search Radar (VSR) are being developed for the *Zumwalt*-class destroyers, CVN-77, and potentially other ship classes. The MFR/VSR radar suite will significantly reduce personnel and maintenance requirements as compared to existing radars, in part due to the incorporation of solid-state technology. They are planned for introduction into the fleet in 2008 on board CVN-77.

The Multi-Function Radar and Volume Search Radar are in the development phases. Raytheon Systems Company of Sudbury, Massachusetts is executing the Multi-Function Radar Engineering Development Model contract, while the Volume Search Radar is being developed as an integral part of the DD 21 ongoing competitive design.

The following information illustrates that investment in this important next-generation technology will yield cost savings in the long run.

COST AVOIDANCE

The Multi-Function Radar and Volume Search Radar are planned to replace the functions of several in-service radars. These in-service radars necessitate continuing investment in the manpower required to operate and maintain them, repair costs, as well as obsolescence of repair parts support for some of them. For example, the SPS-48E radars are no longer in production. A production line restart could be quite expensive. These in-service radars include:

- SPS-48 Long-range three-dimensional air search radar
- SPS-49 Long-range two-dimensional air search radar
- MK 23 Target Acquisition System fire control radar
- SPQ-9B Surface and air search and fire control radar
- MK 95 Illuminators for missile control
- SPN-43 Aircraft marshalling and control radar

MANPOWER COST AVOIDANCE

The projected number of personnel required to maintain and operate a Multi-Function Radar/Volume Search Radar suite is much fewer than for in-service radars. For the ships envisioned as hosting the Multi-Function Radar and Volume Search Radar, the net reduction in the number of operators required for all ships in the radar suite concept is estimated to be over 500 personnel.

The resulting annual savings in manpower costs alone is significant. These new radars will be introduced into the fleet beginning in 2008; the savings would accumulate each year and increase with each ship outfitted with these radars.

OPERATIONS AND MAINTENANCE COSTS

Operations and maintenance expenses for our in-service systems are costly. Advances in solid-state technology alone will significantly decrease the maintenance that today both burdens our sailors' workload and costs the Navy in terms of both readiness and repair expenses.

Based on the projected maintenance requirements for the new radars, the operations and maintenance cost for the new radar suite is expected to be significantly less than the cost for the in-service radars they replace. The annual cost avoidance savings to the Navy for the Multi-Function Radar/Volume Search Radar suite will be in the tens of millions of dollars per year when all ships have been fielded.

Both the Multi-Function Radar and Volume Search Radar are still in development. The manpower and maintenance savings, outlined in the previous paragraphs, make it apparent that significant cost savings will be achieved by the incorporation of these new radars in the fleet. At this point in the development of the radar suite, coupled with sensitivities in the competition for DD 21, it may be premature to forecast the development costs with certainty. The point at which this new radar system's cost reductions will equal the Navy's initial investment is dependent on, among other things, the number of ships on which MFR/VSR will be used, when those ships are brought into service, and final radar suite design. Development cost is, likewise, a function of force structure. We look forward to the opportunity to provide more definitive projections when the force structure is more defined and the DD 21 down selection is completed.

I would also add that the inclusion of these important radars in our surface combatant force structure is not just a matter of cost savings, but also represents in-

vestment in greater capability that will enable our forces to operate in the future, littoral environment. If we were to depend solely on our in-service radars, we would sacrifice some of our future ability to project offense and defense ashore in support of joint forces.

Senator SESSIONS. That is sort of another example of a system that would be more capable and less costly to operate, but you do not have the money for it.

Admiral KELLY. Absolutely. Again, that would apply to a previous subject that Senator Bunning brought up on the CIWS 1B. It is a perfect example of a system that we would like to invest in at a greater rate, so that we could, in fact, lower the manpower demands on maintaining the older version of the CIWS, while at the same time giving us a significant upgrade capability for air and surface targets.

Admiral MCCABE. Senator, the radar for the carriers, is very, very important. For example, this summer we have to make a decision on CVN-77. Based upon how this is doing we have to decide on the shape of the island. We believe not only from all the things you talked about, but also the desire of the carriers to get away from rotating antennas in terms of signature reduction and other kinds of warfighting impact, and so we are very strongly interested in the radar on the aviation and carrier side.

Senator SESSIONS. Thank you. I am going to have to go to another meeting, but I want to thank you for your contributions. I have enjoyed working with you as the chairman for a short time, and also I look forward to working with you in the future. I know Senator Landrieu cares deeply about these issues, and understands them very well.

Thank you for your service to your country. I look forward to working with you in the future.

Senator LANDRIEU. Thank you, Senator. Let me just follow up with two questions, and then we will probably bring this hearing to a close.

I have a broad, yet basic question, Admiral McGinn. I reviewed in your statement, just to paraphrase, you stated that while numbers matter, the number is less important than the capability inherent in those numbers, and you are referring to the ship capacity. Obviously, this is a source of much debate, and we continue to debate this. In the seventies, as you are aware, there was a debate over the high mix, low mix ships. The Navy ultimately chose to do both. Those are embodied today in our *Spruance*-class destroyers, the *Perry*-class frigates.

I agree with the longstanding American tradition of quality over quantity, but that is true only to a point. I wanted to ask you, are we putting our Navy into an ever-tightening spiral which will ultimately stabilize, at which our Navy is incapable of meeting peace or wartime requirements? Do you agree there is a number below which the Navy cannot drop, if so, what is it? Let me just follow up with, given what is happening with the DD 21, should we be buying more guided missile destroyers (DDGs), amphibious transport docks (LPDs), and perhaps an additional multi-purpose amphibious assault ship (LHD) to carry us over until that comes online?

Just a few comments about the specifics of that and anything else you want to add, or any of the other panelists.

Admiral MCGINN. Yes, ma'am. In terms of numbers versus quality, it is a constant discussion, as you mentioned, about what is the right balance between numbers and the capability that is resident in each of the units inside of those numbers.

You have to have not only the right kind of total size of Navy, measured by the numbers of ships and aircraft and submarines, but also the right composition of those ships, the right types for the various mission areas.

In terms of what is the number below which we really cannot meet the national security strategy, that will depend principally on what the requirements of the forward-deployed warfighting CINCs, the joint CINCs are for presence, for peacetime, for rapid crisis response, and for major theater war responsiveness.

That can greatly vary, depending upon the level of risk that the Nation is willing to take, whether or not you assume that we will have a relatively stable and peaceful area in one part of the world that would allow us to apply our naval capabilities, and the numbers of ships in another area that is perhaps less stable. That is always a difficult question and a calculated risk.

Right now, with the national security strategy that we are operating under and which is being reviewed by the Secretary of Defense and the services, we are at a level of ships below which we start increasingly gapping our presence in the three major hubs overseas, the Mediterranean European theater, the Central Command Persian Gulf area, and in the Western Pacific.

In order to maintain our present level of naval force structure, number of ships, we would have to start buying at the rate of between eight and nine ships, or in some cases, in some years up to 10 ships per year. In the past, including in 2001, our level of investment has been much lower than that.

If I averaged across a Future Years Defense Plan, we would need on average of about \$3 to \$4 billion more per year in the shipbuilding account, and that is taking into consideration the discussion that we had earlier about the need to stabilize funding and try to achieve much more industrial capability from the dollars that we invest in.

In terms of the individual ship types that we mentioned, Admiral Kelly spoke earlier of the key role that our land attack destroyer DD 21 plays in supporting both the Marine Corps and the Army in naval surface fire support. Our LPD-17 program is intended to go a long way toward making up that shortfall in assault lift capability that General Whitlow talked about earlier. In fact, it is our procurement goal to buy 12 LPD-17s in order to address that critical need, and to do it in a way that greatly modernizes that particular ship type.

We are continuing to operate the LPD-4 class, the *Austin*-class ships at an increasing cost of ownership, and increasing cost to the sailors and marines that man those ships in terms of the habitability and the effectiveness of the ships. We want to get on with the replacement of the *Austin*-class LPDs.

The LHDs have been a very successful program. Every one that is delivered is better, based on the lessons learned from the pre-

vious one that has been delivered, and we are seeing that trend in LHD-8 as well. These are all critical to maintaining our Navy and Marine Corps assault capability that literally brings answers to the National Command Authority across a full spectrum, from humanitarian assistance, disaster relief due to a natural disaster, all the way up to a so-called kick-down-the-door type of major theater war in a region, in which we would rely on that credible combat power from the sea.

I would defer to General Whitlow.

Senator LANDRIEU. General, could you talk more specifically about the LPD-17s?

General WHITLOW. Yes, ma'am. Previously you asked that question, and it is entirely important and prudent for this Republic to have this capability.

I spoke just yesterday with a senior defense official. He said, since it is the 57th year anniversary of the Normandy landing, we will probably never do another one of those. I said, you are right, and we could not if we wanted to.

That said, the Marine Corps and the Navy do not envision doing those types of operations. We are much smarter than that. The LPD-17 alone brings us such capability, as Admiral McGinn stated, to address everything from the humanitarian, human relief aspects, all the way up to major theater war, with forward-deployed forces.

I maintain, and have done some personal calculations, that we spend a large amount of our rhetoric both here and in defense talking about airlift, which constitutes about 8 percent of the total requirement for wartime lift. The LPD-17, ships like her, the LHD and subsequent ships, provide the other 92 percent of combat lift and sustainability for this country, should we have to maintain an operation of any longevity whatsoever.

The importance of the LPD-17 and ships like her is to provide the 3.0 Marine Expeditionary Brigades (MEBs) worth of lift. What are three Marine Expeditionary Brigades? Frankly, it is not a lot of combat power. Fifty-seven years ago today, just about 200 times that was going across the Omaha and Utah beach in Northern France, 200 times that.

Three Marine Expeditionary Brigades is just enough. It is also the Nation's only forcible entry capability where, when the other guy does not want you there, or we need a port and/or airfield for follow-on forces, whether it be preposition, or flown in from the United States, CONUS, it is the only way this country has to leverage that capability. The LPD-17 I think is one of the most important assets that we will procure in the next couple of decades, and we need to get on with it.

Senator LANDRIEU. Well, of course, this chair loves to hear that, since we build them in Louisiana, so I can appreciate that ringing endorsement and have been part of that project.

I think I have gotten all of my questions in. Does anyone else want to add anything—on that point or something broader, that we have not asked you, that you would like to get into the record?

Admiral KELLY. Madam Chairwoman, I would like to point out, in addition to the remarks with respect to shipbuilding, which I wholeheartedly endorse—I believe that there are tremendous op-

opportunities to modernize the existing force structure that we have to get substantially longer life out of the ships that the American taxpayer has already paid for, which are real bargains as far as upgrading them, to field rapidly new capabilities that will enable us to support the marines in our land attack role, and also to take on emerging missions such as theater ballistic missile defense.

In particular, cruiser conversion is a program that has the potential to help us take advantage of the investment we have already made in our Aegis cruiser fleet and upgrade that to field the capability rapidly to help us meet the challenges coming. I would also urge consideration of how we can best modernize what we have already paid for and get our very fine return on that investment.

Senator LANDRIEU. Thank you. Admiral.

Admiral ENGELHARDT. Madam Chairwoman, I would also like to talk about the 8 to 10 ships that we need to buy from the submarine point of view. In 2004, when we deliver our first *Virginia*-class, that will be the first new submarine commissioned for 5½ years, so this idea that numbers matter is really important to us. We have studied since the end of the Cold War the number of submarines needed. The answer is 68 on the far term in 2015, and right now we are hovering between 50 and 55, so you are absolutely correct on the assertion that numbers matter, and we are working to that. They have to be the right numbers with the right capabilities, as Admiral McGinn has said.

Senator LANDRIEU. Thank you. Anyone else?

Admiral MCCABE. Madam Chairperson, we talked about the number of ships that we are short and will see in the supplemental, the increase in flight-hour funding is such because of the increased cost of maintaining an aging force. You will also see in future budgets that we still need to address the number of airplanes that we need to be buying as well.

Ideally, we would be buying on the order of 180 to 200 aircraft per year, and recent budgets have been well less than that. We will not be able to get at the age of the force and bring down those O&S costs until we increase our procurement quantities of new aircraft both for the Navy and the Marine Corps. That would be inclusive of both sides of the Department of the Navy.

General NYLAND. Madam Chairwoman, I would like to only make two points as we close. The first would be, I appreciate your comment on some of the additional studies. I view the \$1.8 to \$2 billion as quite modest, when you look at the range that goes from \$65 billion to \$120 billion. Second I would only echo what General Whitlow and Admiral McGinn have said about the LPD-17: a wonderfully combat-capable ship with tremendous flexibility, and often lost, a tremendous enhancement for the quality of life for the sailors and marines who live aboard it. We think it is a marvelous ship.

We thank you, and thank you for the opportunity to appear before the committee today.

Senator LANDRIEU. Well, thank you all. It has been a great hearing. I appreciate all of the testimony and the fine work that you all do for our country. I would like to say in closing, as one of the Senators that has been helping to try to design this budget, that there are tremendous budgetary challenges before this Nation. We

are going to have to use all of our best brains, goodwill and intelligence to figure it out, because to go through any strategic review of any major enterprise, let alone our whole defense review, which is good that it is underway, and almost anything that comes out is going to require a significant investment on the front end to make the changes necessary.

I have used this in speeches at home, just like when we reformed welfare. Eventually over time it will save money. However, there had to be some initial investments to turn that corner. I just hope that we are going to be sensitive—if we can do it without that, it will be the first major turn-around done without an infusion of some serious investment. On the short end you have to spend a little bit more money, but on the long end, you are saving the taxpayer dollars.

We have to be prepared, I think, as a Nation to do that, and then we will be well-served over the long run. That is probably going to be the most significant, probably one of the most important debates over this whole Congress, so thank you for your forthcoming comments and for the work that you are doing to help us to make the right decisions.

Thank you all. The hearing is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR EDWARD M. KENNEDY

PROGRAM STATUS

1. Senator KENNEDY. Admiral McGinn, Senator Sessions and I had intended that this hearing would deal with what has happened in the Navy's Seapower research and development and procurement programs since we were briefed last year. I believe that this was clear in our invitation letter, and I know that our staff talked to your staff to ensure that the witnesses provided the information in the prepared testimony that will be useful to the subcommittee as background for reviewing the fiscal year 2002 authorization request.

While I found your prepared remarks interesting, I do not believe that they responded to the need of the subcommittee to have an update on the Navy's investment programs.

Can you provide such an update to the subcommittee for the record?

Admiral MCGINN. While maintaining our sailors' and marines' quality of life, we strive to attain and sustain fully modern, credible, expeditionary warfare capabilities that provide combat-ready naval forces that can influence directly and decisively events ashore throughout the spectrum of operations in peacetime, crisis, and war. This force, at a minimum, will consist of 12 Amphibious Ready Group equivalents, a total of 36 modern amphibious warships.

While transitioning to a net-centric, state-of-the-art, Naval Expeditionary Force, we must have the expeditionary capability to lift 3.0 (fiscally constrained 2.5) Marine Expeditionary Brigades (MEB), the assault echelon of the United States' only legitimate, self-sustainable forcible entry capability—a Marine Expeditionary Force (MEF).

The basic cornerstone of Naval Expeditionary Forces is assault shipping and the supporting platforms and systems that enable its assured access and battle space awareness. An update of our investment programs is as follows:

LHD-8

The Amphibious Assault Ship LHD-8 provides the capability to embark, deploy, and land a marine landing force in an assault by helicopters, landing craft air cushion (LCAC), amphibious assault vehicles, and by a combination of these methods. An LHD is the primary aviation platform within an ARG.

Principal Characteristics: Length: 844 ft.; Beam: 106 ft.; Displacement: 40K long tons; Troops: 1686 (net); Vehicles: 22.9K sq. ft. (net); Cargo: 125K cu. ft. (net).

LHD-8 is viewed as a transition ship to the Amphibious Assault Ship (LHA) replacement program. Upon delivery of the LHD-8 a yet to be determined LHA will be retired. Based on the significant total ownership cost savings, the decision was

made by N8 and ASN (RDA) to go to gas turbine propulsion and all electric auxiliaries.

Congress appropriated advance procurement funding in fiscal years 1999/2000/2001. Utilizing the fiscal year 1999 funds a contract was awarded to Litton Ingalls for the detail design of the gas turbine propulsion plant in July 2000. Procurement of long lead material and construction of components as authorized by Congress was awarded in May 2001. A construction contract award is planned for December 2001 and construction will begin in fiscal year 2002. As approved by Congress, the fiscal year 2002 request includes incremental funding of \$267M which, when coupled with previous appropriations, provides 61 percent of the total LHD full funding requirement of \$1.82 billion.

LPD-17

The LPD-17 Program is a 12-ship procurement. It was designed to replace four classes of legacy amphibious ships, many of which have been decommissioned. The contract for the lead ship was awarded to the Avondale Alliance in 1996. The Alliance is made up of Litton Avondale Industries (LAI), Bath Iron Works (BIW), Raytheon and Intergraph. Detail design is being accomplished in an Integrated Product and Process Design team environment. Principal location is in New Orleans, LA, with work also accomplished in San Diego, CA and Bath, ME. Under an internal industry agreement, every third ship will be constructed at BIW. BIW is completing a new facility to support construction of DDGs and LPD-17.

LPD-17 is a quantum step in warfighting capability. Principal characteristics include:

Length: 684 ft.; Beam: 105 ft. (PANAMAX); Displacement: 25K tons; Propulsion: Diesel; Vehicle square: 25K sq. ft. (net); Cargo cube: 36K cu. ft.; Troops: 720 (net); LCAC: 2.

The enhanced self-defense and C⁴I suite make LPD-17 a survivable platform capable of the full range of mission requirements. Although not flag configured, the robust communications capability fully supports split ARG operations.

There has been significant consideration and investment in total ownership cost reduction for the LPD-17 program. Investment in items, which also contribute to mission performance, included the replacement of the 25mm chain gun with the MK 46 30mm gun system and the Advanced Integrated Mast replacing the traditional stick mast. Further, design for ownership concentration has led to unprecedented Navy/Marine Corps user input during the design process. To enhance the quality of life, the design includes sit-up berths and modernization of the food service system.

LHA(R)

The LHA Replacement, LHA(R), is planned to replace the current LHAs that reach the end of their service life beginning in fiscal year 2011. The Mission Needs Statement was validated by the Navy and the JROC on 5 Mar 2001. The LHA(R) program's next step is Milestone "A". Once achieved, the Flag level Analysis of Alternatives (AoA) will commence. The AoA will determine the type of ship required to conduct Navy and Marine Corps missions in the 21st century. The decision will be between an LHD-8, a modification to the LHD class or a new ship design. Acquisition of the first LHA(R) is planned for fiscal year 2008 and delivery is anticipated in the fiscal year 2014/2015 time frame.

LCAC SLEP

The Landing Craft, Air Cushion (LCAC) is the primary platform for high speed, heavy lift, over-the-horizon transport of troops and materiel from ship to shore. The LCAC was designed to carry the M60 main battle tank, but is capable of transporting the M1A1 main battle tank equipped with a mine-clearing plow. The LCAC, the MV-22, and the AAHV comprise the Marine Corps Amphibious Triad, which will provide the air, and surface lift requirements of the Amphibious Assault Echelon. The LCAC will be critical to the successful implementation of Operational Maneuver From The Sea (OMFTS) and Ship To Objective Maneuver (STOM). The Service Life Extension Program (SLEP) is composed of two phases: Phase I accelerates installation of command, control, communications, computer, and navigation (C⁴N) upgrades. Phase II replaces the buoyancy box and installs all other SLEP changes, such as the machinery/skirt upgrade. The SLEP is planned for 74 craft.

LCU Replacement

The LCU(X) acquisition program will support the development and procurement of a technologically advanced heavy lift utility landing craft to complement the high speed, over-the-beach, and ship-to-shore amphibious lift of the future. The LCU(X) will replace an aging Landing Craft Utility (LCU) force of 26 to 38 years old, en-

hance current heavy lift capability, and complement the LCACs during littoral and over-the-horizon amphibious operations. The Mission Area Analysis (MAA) is complete, the Mission Needs Statement (MNS) is signed, and Milestone "A" decision to conduct concept studies was granted on 28 November 2000.

Naval Mine Warfare

Our "Organic Mine Warfare" initiative is to decrease response time to commence the Mine Countermeasures (MCM) campaign and expand the overall MCM capability of the Navy. This "Organic Mine Warfare" initiative will provide MCM systems that have been integrated, both physically and doctrinally, into the Navy Joint Task Forces. It will offer the Joint Task Force a Carrier Battle Group/Amphibious Readiness Group compatible MCM capability that will bring a "see and avoidance" and, when necessary, a limited mine neutralization capability. Organic MCM will complement our dedicated MCM Forces.

Organic MCM capability will be provided to the Battle Group via a "system of systems" approach that will include air, surface and subsurface components. These systems include:

Airborne Component

The airborne component of organic MCM will consist of five systems operated from the MH-60S helicopter. These airborne systems are:

- The Airborne Laser Mine Detection System (ALMDS) and the Rapid Airborne Mine Clearance System (RAMICS) which will counter near surface mines. ALMDS will utilize laser technologies to detect near surface, surface, and floating mines. RAMICS, an Advanced Technology Demonstration program, has now completed its second year with the successful demonstration of the super-cavitating projectile's lethality against selected live mines below the surface of the water.
- The AN/AQS-20X Advanced Minehunting Sonar and the Airborne Mine Neutralization System (AMNS), which will counter deeper moored mines and bottom mines. The AQS-20X, which consists of five different sensors integrated into a towed body, will provide a significant improvement over today's system because it will accomplish in a single pass of the helicopter what today takes multiple passes. The AMNS will be operated from within the helicopter to destroy or neutralize mines.
- The Organic Airborne and Surface Influence Sweep (OASIS), which is being developed to support shallow water mine clearance in advance of amphibious operations.

Surface Component:

- The Remote Minehunting System (RMS) is being developed to deploy from surface combatants and operate remotely over-the-horizon. Current efforts focus on integrating the airborne minehunting sonar, the AN/AQS-20X, into the systems and integrating the entire system into selected DDG-51 Flight IIA surface ships (DDG-91 and follow-on hulls).

Subsurface Component:

- The Near Term Mine Reconnaissance System (NMRS), an Unmanned Underwater Vehicle (UUV) launched from a submarine for clandestine reconnaissance of mine fields, was delivered to the fleet this past year as a "stop gap" capability. This was an important first step in providing the fleet with an organic subsurface mine warfare (MIW) capability while the Long Term Mine Reconnaissance System (LMRS) is under development. The LMRS development contract was awarded in fiscal year 2000 and the system was re-designated as the AN/BLQ-11 Mine Reconnaissance System (MRS). The MRS is planned for delivery to the fleet in fiscal year 2003.

Unmanned Aerial Vehicles (UAV)

Based on an approved Operational Requirements Document (ORD), the competitive development program for a VTOL Tactical UAV, the VTUAV, is planned to replace the Pioneer Unmanned Aerial Vehicle (UAV) in the Navy and Marine Corps. As VTUAV systems are fielded, Pioneers will be replaced.

The VTUAV's speed, endurance, and payload capacity, combined with its ability to takeoff and land on all air-capable naval platforms and from austere ground sites ashore, will provide the Naval Services with a robust, multi-purpose, marinized unmanned platform. With its embedded Tactical Control System (TCS) software, the VTUAV ground control station (GCS) will provide a revolutionary capability to command and control all DOD tactical UAVs and interface with a multitude of C4I systems.

Surface Warfare

Current Navy near- and long-term investment programs are on track to meet emerging threats, maintain force levels, and reduce life cycle maintenance cost. Open Architecture and Common Command and Decision (C&D) enable future warfighting upgrades to be introduced in a cost effective manner while reducing life cycle maintenance. With an initial research and development (R&D) investment in this technology, warfighting upgrades can be introduced faster and at a reduced cost due to a contracted development effort and schedule. Transitional Technology introduces new warfighting capabilities to the fleet in support of national strategy, evolving missions (missile defense, land attack), while pacing the threat. Cruiser Conversion sustains force structure, deploys new warfighting capabilities in the most cost effective manner. Smartship technologies will decrease the workload for the sailor resulting in reduced manning levels and life cycle maintenance costs for the fleet. While these investment strategies are on schedule, additional funding will speed program development and introduction of these technologies into the fleet.

Submarine Warfare

Funding of Submarine Warfare procurement programs has increased by approximately 24 percent from fiscal year 2001 to fiscal year 2002 (President's Budget 2001 figures). The increase is due largely to:

- (1) fiscal year 2002 includes satellite control network (SCN) funding for two nuclear-powered attack submarine (SSN) refueling overhauls vice one in fiscal year 2001.
- (2) fiscal year 2002 includes a significant increase in Weapons Procurement, Navy (WPN) for Trident D5 Missile Life Extension efforts (\$144M in fiscal year 2002 vice \$33M in fiscal year 2001).
- (3) fiscal year 2002 is the first year of Tactical Tomahawk procurement.

Funding of Submarine Warfare related RD TEN funding has decreased by approximately 17 percent from fiscal year 2001 to fiscal year 2002 primarily due to the continuing reduction in *Virginia*-class RD TEN requirements. (Fiscal year 2001—\$212M, fiscal year 2002—\$159M).

Aviation Warfare

While maintaining our sailors' and marines' quality of life, we strive to attain and sustain fully modern, credible, aviation warfare capabilities that provide combat-ready naval forces that can influence directly and decisively events throughout the spectrum of operations in peacetime, crisis, and war. Across the spectrum from humanitarian operations and engagement, to theater contingency and sustained combat, our sailors and marines stand ready to influence, directly and decisively, events ashore from the sea.

In the last decade, the rate at which Naval Expeditionary forces were called upon to respond to crises increased from less than six per year to nearly once every 3 weeks. Since December 1998, we have had seven Battle Groups and Carrier Air Wings engaged in combat. U.S.S. *Enterprise* and U.S.S. *Carl Vinson* teamed to provide the preponderance of striking power during the 4 days of Operation Desert Fox in Iraq. They, along with *Theodore Roosevelt*, *Constellation*, *Kitty Hawk*, *John F. Kennedy* and currently *John C. Stennis* Battle Groups, have steadfastly enforced the no-fly zone in Iraq through Operation Southern Watch. Finally, *Theodore Roosevelt* Battle Group and embarked Carrier Air Wing EIGHT, along with land-based Maritime Patrol and Reconnaissance Aircraft, expeditionary EA-6B Prowler squadrons, Marine F/A-18D Hornet squadrons, AV-8B Harriers from *Kearsarge* Amphibious Ready Group and helicopters from *Kearsarge* and *Inchon* Mine Countermeasures Squadron, combined to fly over 3,000 combat sorties as part of the air campaign in Kosovo. *Roosevelt* Battle Group and Carrier Air Wing EIGHT were engaged in combat just 9 days after completing air wing Carrier Qualifications (CQ) off the Virginia capes and less than 24 hours after entering the 6th fleet area of responsibility.

Our remarkable success in these operations validates the requirement for sustained, unconstrained and forward Naval Expeditionary forces. The lion's share of the credit rests with the sailors and marines who serve with distinction and honoring the challenge of increased operations tempo despite the effects of a prolonged draw down of personnel and equipment. As we focus on taking care of our people and protecting and sustaining readiness to meet today's commitments, we have difficult choices to make in order to balance these against the modernization and recapitalization efforts necessary to ensure Naval Aviation and Naval Expeditionary forces remain capable of meeting the Nation's security requirements into the 21st century and beyond.

Carrier-based Tactical Aircraft

The F/A-18E/F Super Hornet remains our number one warfighting priority. The F/A-18E/F Super Hornet has completed Operational Evaluation testing and received an "Operationally Suitable and Operationally Effective" evaluation from Commander, Operational Test and Evaluation Force, and achieved all of its Key Performance Parameters (KPP). The Navy's full rate production decision was concluded in March 2000 and a multi-year procurement contract agreement was signed in June 2000 for the production of 222 aircraft from fiscal year 2000 through fiscal year 2004. The multi-year procurement will save over \$700M compared with single year procurement. The Navy's inventory objective is 548 aircraft based on the 1997 Quadrennial Defense Review. The aircraft incorporates up to a 40 percent range improvement over the F/A-18C in certain flight regimes while at the same time doubling the weapons load when configured for close air support missions. A reduced radar cross section, coupled with robust countermeasures and new-generation combat-proven precision standoff weapons, will also result in the Super Hornet being more survivable than current strike-fighters. The establishment of VFA-122, the Super Hornet Fleet Replacement Squadron, and the successful completion of Operational Evaluation are significant steps toward the F/A-18E/F's introduction to the fleet and first operational deployment scheduled for 2002.

To ensure Super Hornet remains a 1st class warfighter we are committed to a package of advanced capabilities designed to outpace the threat in the 21st century. These programs include the Advanced Electronically Scanned Array (AESA) radar, Advanced Targeting Forward Looking InfraRed (ATFLIR), Shared Reconnaissance Pod (SHARP), Integrated Defense Electronic Counter-Measures (IDECM) system, and the Joint Helmet Mounted Cueing System (JHMCS) and associated AIM-9X air-to-air missile.

The EA-6B is America's sole airborne support jammer. The tremendous demand for the Prowler's unique capabilities to support the air campaign in Kosovo, in addition to meeting other on-going CINC requirements, highlights the continued importance of airborne Electronic attack. Currently our EA-6B fleet is being modified to a common configuration and equipped with new, improved jamming pods. The Prowler will begin receiving the new Improved Capability III (ICAP III) upgrade in the FYDP. ICAP III provides a significant improvement to the EA-6B's receivers, which in turn will enhance jamming performance. It also includes increased battle space connectivity critical to Network-Centric Operations. The Navy is also leading a 2-year joint Analysis of Alternatives to determine the appropriate follow-on to the EA-6B platform.

The E-2C Hawkeye performs critical airborne command and control for our expeditionary forces. E-2C missions include early warning of approaching enemy air and surface units through area surveillance, intercept, search and rescue coordination, communications relay and strike/air traffic control. PB-01 includes \$321M for five aircraft, while the E-2C multi-year program is expected to save a total of \$204M. Programs to modernize the E-2C include the Radar Modernization Program (RMP) and Cooperative Engagement Capability (CEC). RMP offers significantly improved capability against small and overland targets, while incorporation of airborne CEC in the E-2 will provide a revolutionary improvement in our ability to detect, track and engage targets in concert with CEC-capable surface combatants.

Our program for the next generation of aircraft carriers, known as CVNX, relies on a three-stage evolutionary strategy to a new class of carrier for the future. CVN-77, the final *Nimitz*-class carrier, will feature a new combat system and integrated island. CVNX-1 will have a completely redesigned power plant, electrical distribution systems and the Electro-Magnetic Aircraft Launch System (EMALS). CVNX-2 will complete the evolution, combining innovations from both of the previous two carriers. In each step, we plan to achieve incremental reductions in total ownership costs and manpower requirements, culminating in CVNX-2 in a total reduction of 1,200 to 1,500 billets and a 20 to 30 percent reduction in total ownership costs.

Maritime Patrol and Reconnaissance

The P-3C Orion and EP-3E Aries aircraft comprise the Navy's Maritime Patrol and Reconnaissance (MPR) force. These aircraft begin reaching the end of service life (due to fatigue) in the fiscal year 2003 and without corrective action approximately 24 P-3s will reach 100 percent fatigue life by 2007. Based on current predictions of fatigue life expended, in fiscal year 2010, the inventory of P-3Cs will be reduced by 59 aircraft, and the inventory of EP-3Es will be reduced to 8 aircraft unless steps are taken to sustain the inventory.

Multi-mission Maritime Aircraft (MMA) is planned to be the permanent solution to sustaining the MPR inventory through the middle of the 21st century. MMA received a successful acquisition Milestone 0 (MS 0) in April 2000 and entered the

concept exploration phase in July 2000. Development and procurement costs are currently estimated to be as high as \$7 billion and \$32 billion respectively if a new design aircraft is chosen as MMA or as low as \$2 billion and \$12 billion if the P-3 remanufacture is chosen. Other potential alternatives fall between these two extremes. These costs and performance requirements are being reexamined as part of the acquisition process in an Analysis of Alternatives (AoA) scheduled to complete this year. The Navy's intent is to use the results of this AoA to assist in the acquisition of an MMA in the 2010-2012 timeframe.

Beginning in fiscal year 1999, a Service Life Assessment Program (SLAP) was undertaken using engineering analysis and actual reaction frame fatigue measurements to identify components and structural elements that are vulnerable to fatigue. SLAP will provide the analytical and empirical information required to accurately determine P-3 fatigue life. Special Structural Inspections (SSIs) and repairs will be based on SLAP results and will be depot-level events required for all P-3s exceeding 100 percent fatigue life expended (FLE). Aircraft under this inspection and repair plan should be able to attain 130 percent FLE, thereby sustaining the operational MPR force until MMA is fully operational.

Helicopters

Our Helicopter Master Plan (HMP) is the linchpin of a modern, total force solution to increase fleet capability and lethality in the littorals. The neck-down of our helicopter force from seven type/model/series to two, the MH-60 Sierra (formerly CH-60S) and the MH-60 Romeo (formerly SH-60R), will greatly expand warfighting capability while significantly reducing costs.

The HMP was originally developed from studies initiated by Office of the Chief of Naval Operations (OPNAV) and Naval Air Systems Command (NAVAIR) in the early 1990s and has been revalidated by Integrated Warfare Assessment studies. The HMP changes through an iterative process and continues to evolve in response to fleet requirements and budgetary challenges. Capitalizing on the efficiencies of singular maintenance, logistics, and training pipelines, the HMP satisfies the needs of both our Active and Reserve Forces.

Both helicopters have met significant milestones. The MH-60R will extend and increase the capabilities of the surface combatant in all mission areas. This Battle Group asset, optimized for littoral operations with its advanced multi-mode radar, an active dipping low frequency sonar system, and Hellfire/Forward Looking Infrared (FLIR) system, will provide significant warfighting enhancements over the current force of SH-60Bs and our carrier-based SH-60Fs.

The MH-60S will be introduced in fiscal year 2002 and accelerate the retirement of aging CH-46D helicopters by approximately 28 months. The MH-60S will fill myriad multi-mission helicopter requirements, performing passenger/mail/cargo transport, vertical replenishment, Search and Rescue, and Combat Search and Rescue in the years ahead. In addition, it completed Phases I and II of its Airborne Mine Counter-Measures (AMCM) Proof of Concept testing and has demonstrated the ability to perform all required AMCM mission profiles.

In addition to modernizing the naval helicopter force, the HMP expands the total Navy warfighting capability and assumes warfighting missions (e.g., as the S-3 retires from service), providing an increase in deployed operational flexibility and battle group combat power. It showcases the MH-60S and the MH-60R as tactical assets able to perform the full spectrum of helicopter missions including Antisubmarine Warfare, Anti-Surface Warfare, Combat Search and Rescue, logistics, and organic Airborne Mine Countermeasures.

Summary

America's global security interests, recent world events and on-going operation in the Arabian Gulf and Balkans are validating both our past decisions with regard to the right aircraft, weapons and personnel, as well as our commitment to sustaining the readiness of our forces, which now routinely deploy in harm's way. Forward presence, maritime dominance and decisive landward power projection in the littorals require aircraft and weapons systems capable of responding rapidly to a wide range of mission in an increasingly complex and demanding threat environment.

While Naval Aviation has an aging aircraft population, there are significant programs planned and in place to ensure that our forces provide the most advanced and lethal combination of assets forward deployed. The most expedient means of obtaining this capability with the lowest resultant life cycle cost would be to modernize the force with new aircraft. This option is not possible within the total obligation authority of the Navy at this time. Through the plans presented, the Navy is in the process of modernizing its current platforms and reducing the number of type/model/

series aircraft to reduce its operations and support costs. The end result of these efforts will be to provide the most cost effective force possible within the budget submitted.

DD 21 DELAY

2A. Senator KENNEDY. General Nyland and Admiral McGinn, I realize that this is not a shipbuilding hearing. Nevertheless, I do not feel that we can let this opportunity go by without noting that the Navy has again delayed the DD 21 contract award. This subcommittee has taken a strong position in support of meeting Marine Corps fire support requirements. At previous hearings, Marine Corps witnesses have testified that the only approach that will meet their naval surface fire support requirements would be the capability planned for the advanced gun system on the DD 21. General Nyland, is that still the position of the Marine Corps?

General NYLAND. Yes, this is still the position of the Marine Corps. Near-term programs such as the 5"/62 gun, Extended Range Gun Munition (ERGM), and the Land Attack Standard Missile (LASM) will provide an enhanced Naval Surface Fire Support (NSFS) capability, but will not meet all of the range and lethality requirements for supporting the Marine Air Ground Task Force (MAGTF) in expeditionary operations. In the far-term, the 155mm Advanced Gun System (AGS), with a family of precision-guided and ballistic ammunition, and an advanced land attack missile, with a family of general use and specialty warheads, will meet these requirements. The capabilities provided by the DD 21 and its associated systems remain vital to realizing the full potential of Expeditionary Maneuver Warfare (EMW) and the conduct of expeditionary operations and sustained operations ashore in a fluid, non-linear battlespace.

2B. Senator KENNEDY. Admiral McGinn, is there some other alternative that the Department would propose for meeting the fire support requirement?

Admiral MCGINN. The Navy has a robust plan to develop a family of weapon systems capable of meeting Marine Corps requirements for fire support. DD 21 is the first ship designed from the keel up with a mind toward fully meeting these requirements and the Navy is fully committed to building DD 21. The capability of her 155mm Advanced Gun System and Advanced Land Attack Missile will make her the most capable fire support ship ever built.

In the near term we are developing the Extended Range Guided Munition (ERGM) and the Land Attack Standard Missile (LASM) to provide an initial fire support capability in our current AEGIS fleet of destroyers and cruisers.

The combination of near-term solutions with ERGM and LASM and the development of DD 21 will satisfy Marine Corps requirements for fire support.

2C. Senator KENNEDY. Admiral McGinn, are you confident that the Navy will still be able to conduct the necessary development activities to permit starting construction of the lead ship in fiscal year 2005?

Admiral MCGINN. The Navy's decision to hold the DD 21 downselect in abeyance pending completion of the Pentagon's strategic review is expected to impact the program schedule in relation to the length of the delay. In order to minimize the impact of that decision, the Navy extended the DD 21 Agreement Phase II period of performance to continue development of key technologies, such as the Advanced Gun System, Integrated Power System, shared apertures, software, manning reduction initiatives, modeling and simulation, and radar suite development. By continuing development of the most critical technologies for DD 21 the Navy believes that it will mitigate the effect upon the ship schedule. The Navy will conduct a further assessment of the program schedule upon award of the Phase III contract.

ERGM DELAY

3A. Senator KENNEDY. Admiral Kelly, last year the Navy was projecting that the Extended Range Guided Munition, or ERGM program, would achieve initial operational capability (IOC) in fiscal year 2004, a slip of some 2 years from the original goal. This year, as I understand it, you are projecting that ERGM will achieve IOC in fiscal year 2005. I know the ERGM program has been an important part of your plans for improving fire support capability, but we seem to be experiencing continuing delays in the program.

I understand that you are considering an alternative, called the autonomous naval support round, or ANSR to mitigate some of the risk in the ERGM program.

How confident are you that the ERGM contractor team can solve these problems?

Admiral KELLY. Raytheon Missile Systems is the prime contractor developing ERGM. Since Raytheon moved the ERGM program from Lewisville, TX to Tucson, AZ, they have established an impressive record on the ERGM program. They assigned a new project manager who assembled a comprehensive plan to identify and quickly resolve technical and programmatic challenges. Additionally, they worked extensively with our own talented munitions experts at the Naval Surface Warfare Center, Dahlgren Division to overcome technical challenges.

On January 31, 2001, the government and contractor team executed a very successful pre-production ERGM round test flight. This incorporated Global Positioning System and Inertial Navigation System (GPS/INS) guidance. This test achieved all primary and most secondary objectives. This test was instrumental in Navy decision to continue the ERGM program for satisfying near-term fire support requirement.

Navy is confident that the contractor team will solve remaining technical challenges and field ERGM in 2005.

3B. Senator KENNEDY. Admiral Kelly, how do you believe that the ANSR program could help mitigate the risk you face?

Admiral KELLY. ANSR provides an alternative concept for a gun-fired, precision-guided munition. It relies on a different type of advanced technology for guidance, rocket motor, and warhead. ANSR features a unitary warhead whereas ERGM features 72 submunitions for its warhead.

Both ERGM and the ANSR concept have development risk. They rely on different technologies and provide different capabilities. ERGM has completed a demonstration and is well along in Engineering and Manufacturing Development (E&MD). The ANSR demonstration cost is estimated to be \$15 million before commencement of E&MD. ANSR will not reduce risk in the ERGM program.

The Navy fully supports the demonstration of alternative capabilities to meet USMC fire support requirements. There are several Advanced Technology Demonstrations including Barrage Round, Forward Air Support Munition, and Best Buy that are risk mitigating for advanced gun-fired concepts.

3C. Senator KENNEDY. Admiral Kelly, what, if anything, do the continuing ERGM problems tell us about the risk for fielding the projectile for the advanced gun system on time?

Admiral KELLY. Under OSD guidance, Army and Navy are working on commonality initiatives for our three, main, precision-guided, gun-fired munitions: ERGM, 155mm Long Range Land Attack Projectile (LRLAP) for the Advanced Gun System, and Army's XM982 Excalibur 155mm artillery round. Due to planned Initial Operational Capability schedules of these rounds, ERGM will be in service first. As such, ERGM is the prime risk mitigator for the two following 155mm rounds. The problems solved in the ERGM program will help provide solutions for follow on 155mm rounds. All three programs require a gun-hardened guidance section. LRLAP will have a rocket motor like ERGM.

All major components of the ERGM round were proven in gun fired testing at 12,000 times the force of gravity, which is required for operational capability. On January 31, 2001, we conducted the first ERGM test flight of an all-up-round. We are on track for solving the remaining challenges inherent in any round with these capabilities.

By solving these problems in the ERGM program, we have confidence that we will mitigate risks associated with follow on systems.

TOMAHAWK PROGRAM

4A. Senator KENNEDY. Admiral Kelly, myself, and others were concerned that expenditures rates in Kosovo and other operations might be causing us to draw down inventories too low, waiting on the new Tactical Tomahawk. Previously, Admiral Lautenbacher said that we should not expect to see shortages of Tomahawk missiles "in the foreseeable future." He did remind us of the continuing issue of having the right number and types of Tomahawk missiles in each of the three deployment theaters. I believe we have attempted to deal with the latter issue last year with additional remanufacturing of older versions of the missile and accelerated missile overhauls.

Since last year, there have been some additional delays in the Tactical Tomahawk program.

Could you describe what has happened to the program since last year?

Admiral KELLY. In January 2001, Raytheon notified the Navy that the aft body castings for the qualification and flight test missiles were being incorrectly manufac-

tured. This, in addition to delays receiving hardware for qualification testing, engine integration issues and underestimating automatic test equipment capacity requirements, caused a delay for initial testing by 6 months. The delay also resulted in an adjustment of the Initial Operational Capability (IOC) from fiscal year 2003 into fiscal year 2004.

Raytheon continues to make significant progress in the development program. Rocket motor development and qualification is complete, the engine design is complete and is in qualification testing, and the first Tactical Tomahawk flight test will occur in early 2002. The Tactical Tomahawk program continues to meet or exceed all performance requirements.

4B. Senator KENNEDY. Admiral Kelly, is the Navy considering remanufacture of older versions of the missile to make up for this delay?

Admiral KELLY. Remanufacture of older missiles is not required based solely on the Tactical Tomahawk (TACTOM) schedule delay. Additionally, the Navy is not currently considering the remanufacture of older versions of the Tomahawk missile for the following reasons:

- Remanufacture of Tomahawk Anti-Ship Missiles (TASM) to the TLAM Block III configuration is not cost effective (estimated \$1.4M per missile plus non-recurring.) These missiles would not be available to the fleet before fiscal year 2004, the same time Tactical Tomahawk will start delivery. If allotted funds—buy more TACTOM instead.
- Approximately 300 TLAM Block II missiles are available for remanufacture to the Block III configuration. If ordered in fiscal year 2002, delivery of these missiles would begin in fiscal year 2004, the same time Tactical Tomahawk will start delivery.
- Current plans are to retire Block III missiles beginning in 2012.

Early and continuing delivery of remanufactured missiles funded in the fiscal year 1999 emergency supplemental have helped alleviate pressure on the Tomahawk inventory.

P-3 MODERNIZATION/EP-3 FORCE REDUCTION

5A. Senator KENNEDY. Admiral McCabe, I believe that we need to address the question of the P-3 community force structure. The P-3 forces that operated in Kosovo acquitted themselves very well, and demonstrated the attractiveness of the Anti-Surface Warfare Improvement Program, or AIP. We are all now much more familiar with the EP-3 and the Surveillance missions that aircraft supports.

Unfortunately, many of the P-3 and EP-3 aircraft will be reaching the end of their service lives in the next few years. Over the past decade, there does not appear to have been a substantial commitment to supporting the resources required to keep these aircraft forces modernized.

I do not know exactly what Secretary Rumsfeld's strategy review may portend, but I find it hard to believe that the Navy can afford to get out of the maritime patrol aircraft business. If the Navy does not take action soon, I fear that this may happen.

Is there a real commitment within the Navy to maintain P-3 force structure?

Admiral MCCABE. There is a real commitment within the Navy to maintain the capability the P-3s provide warfighters.

5B. Senator KENNEDY. Admiral McCabe, why should the subcommittee not be alarmed by the prospect that the Navy will be forced to cut P-3 forces structure further?

Admiral MCCABE. Navy and OSD continue to analyze a variety of options to fill requirements currently filled by P-3 and EP-3 aircraft. The options include not only manned aircraft (i.e., Multi-mission Maritime Aircraft (MMA)) but also innovative ways to provide part of the capability the CINCs need that do not require manned aircraft such as unmanned aerial vehicles. The analyses suggest that a manned aircraft is an essential element of filling the void created if P-3s and EP-3s are not replaced soon.

The Navy and OSD have examined both extending service life and remanufacturing the airframes as part of the Analysis of Alternatives. Preliminary results point to new procurement as a more economical solution than remanufacture of legacy airframes. As a result, the Secretary of the Navy targeted the 2010–2012 timeframe for MMA initial operating capability and realigned funds previously programmed for SLEP to MMA.

Both the MMA and promising adjunct systems are to be further examined next year as a follow-on effort to the work already completed. As this work matures over the next several years, manpower and force structure studies will help define the future force structure for Maritime Patrol and Reconnaissance forces.

As P-3s reach the end of their fatigue life, the Navy plans to inspect each airframe and perform repairs. The Navy currently estimates that these Structurally Significant Inspections (SSIs) will be adequate to extend the service life 600 flight hours or 1 year, whichever occurs first. The Navy estimates that as many as six SSIs can be performed before the airframe must be retired. This will help bridge the capability gap until MMA attains IOC and any UAV solutions can be implemented.

The Navy does not anticipate any force structure cuts like those experienced in the recent past. It will look to changes in future force structure based on both MMA and other innovative ways (e.g., UAVs) to sustain and improve the capability provided by P-3s today.

MARINE CORPS HELICOPTER PROGRAM COST GROWTH

6. Senator KENNEDY. General Nyland, we understand that the program to upgrade the Marine Corps' utility helicopter and attack helicopter fleets has been experiencing cost growth. It is not clear whether this is just the engineering and manufacturing development (EMD) portion of the program, or whether this may translate into higher recurring procurement costs. This contractor is also one of the prime contractors for the V-22 program.

Can you describe what is the extent of the cost or schedule problems in this program?

Can you provide an assessment of what impact the delay in the V-22 program will have on the utility and attack helicopter upgrade program?

General NYLAND. Although we do not anticipate any impact on the production and delivery schedule in the H-1 upgrade program, we are concerned with the cost increases forecasted due to the reduction of V-22 procurement and the prorating of a fixed overhead cost. If planned procurement of the V-22 were to drop to 11 aircraft per year in fiscal year 2001 through fiscal year 2003, the projected cost increase for the AH-1Z and UH-1Y would total \$25.2M.

RAMIFICATION OF V-22 DELAY

7. Senator KENNEDY. General Nyland, it is my understanding that considerable planning and reorganization went into the training and support of MV-22 training squadrons and future operational units. These steps included reassignment of pilots, mechanics, administrative, and supply support personnel from other units, particularly CH-46E helicopter units, to the MV-22 program.

If the panel's recommendations are accepted and MV-22 production is slowed to a minimum sustaining level, what impact will that have on force structure within the Marine Corps aviation community?

General NYLAND. The slowing of MV-22 production and procurement will have no impact on the force structure of Marine Corps aviation communities. The force structure associated with the MV-22 is designed to be a one-for-one replacement for the force structure of the CH-46E and CH-53D. Delays in transitioning from the CH-46E or CH-53D to the MV-22 will affect force structure by merely delaying personnel transitions to the MV-22. As the MV-22 program experiences delays, we will manage the force structure and personnel accordingly.

FIXING V-22 AIRCRAFT ALREADY BUILT

8. Senator KENNEDY. General Nyland, one recommendation of the Panel to Review the V-22 Program is to keep the production lines open by producing MV-22s at the minimum sustaining level. Currently, eight aircraft have already been produced and are now awaiting retrofits yet to be defined.

What does the Marine Corps plan to do with these aircraft?

What can you tell us about the plan to retrofit aircraft that will have already been produced before all the fixes have been identified?

General NYLAND. The MV-22s assigned to the V-22 Fleet Replacement Squadron, VMF-204 will remain in place, under the operational control of the squadron.

Once the on-going design and technical review activities are completed, the program office will develop and disseminate a list of Engineering Change Proposals (ECPs) to ensure aircraft already delivered to the fleet are outfitted with the most

recent improvements. Modification teams will deploy to Marine Corps Air Station (MCAS) New River to conduct the ECP work and ensure fleet aircraft are in compliance with, and in the same configuration as, the newest aircraft delivered from the factory. In addition, on going efforts for verification of publications and other related maintenance activities will be undertaken.

QUESTIONS SUBMITTED BY SENATOR MARY L. LANDRIEU

FORCE LEVELS

9A. Senator LANDRIEU. Admiral McGinn, I was struck by a line in your opening statement. You said that, to paraphrase “while numbers matter, the number is less important than the capability inherent in those numbers.” Obviously this is a source of much debate. Back in the 1970s there was a debate over “hi-mix/low-mix” ships and the Navy ultimately chose to build both—embodied today in the *Spruance*-class destroyers and *Perry*-class frigates. While I agree with the long-standing American tradition of quality over quantity, that is true only to a point. Should the number of hulls in our Navy get too small, we simply will not be able to meet all peacetime presence commitments nor even be able to take advantage of all the advantages of network-centric warfare—it doesn’t work too well if you only have one or two nodes! Given those thoughts, I am led to conclude that current shipbuilding plans in the Future Years’ Defense Program (FYDP) are putting our Navy into an ever-tightening death spiral which will ultimately stabilize at a Navy which is completely incapable of meeting peace or wartime requirements. That’s why I’m such a big supporter of our shipbuilding programs and believe we need to be buying more than what the FYDP calls for, not less as we have historically done over the last few years.

Do you agree that there is a number below which the Navy cannot drop? If so, what is it?

Admiral MCGINN. Yes, I agree that there are a minimum number of ships the Navy must maintain in order to meet our peacetime and wartime missions. However, I cannot provide a minimum number at this time. As we proceed through the current QDR and the Defense Department’s strategic review of our force structure requirements, the number is likely to fluctuate. When the reviews conclude in approximately 60 to 90 days we should have a better idea of what the future force should be. Ultimately, the size of our force will depend on how we apply the lessons from the past few years and transformational technologies that make our ships more capable and responsive to our anticipated missions in an evolving national security strategy.

9B. Senator LANDRIEU. Admiral McGinn, given what is happening with DD 21, should we be buying more DDGs, LPDs and perhaps an additional LHD to carry us over until it comes online?

Admiral MCGINN. The DD 21 program of record remains unchanged; the lead DD 21 is programmed in fiscal year 2005 and three follow ships are programmed in fiscal year 2007. The Navy has held completion of the DD 21 source selection in abeyance, until results are known from the Secretary of Defense’s Strategic Review, the Quadrennial Defense Review and OSD’s study of future shipbuilding programs. Any impact of the reviews on the DD 21 program of record cannot be assessed until results of the reviews are known.

The overall rate at which Navy is currently building ships, which averages six and a half ships per year, will not produce the numbers of ships needed to sustain the present fleet size. Furthermore, at this rate, we are producing ships below economic rates and do not provide incentives to modernize the shipbuilding industry. On the order of nine ships and roughly an additional \$3B per year are required to maintain our current force structure to meet present and future missions.

9C. Senator LANDRIEU. Admiral McGinn, just as in the 1970s, should we not buy a mixture of highly-capable and less-capable ships, perhaps by building a mix of DD 21s and streetfighters? Why or why not?

Admiral MCGINN. While a combination of highly capable and less capable ships may increase Navy’s overall battle force numbers, they may not represent the most efficient force. More important than numbers is the warfighting capability that the combined force delivers. Ultimately, the size and makeup of our future surface force will depend on our national security strategy, evolving mission capabilities, and emerging transformational technologies. As our strategic direction becomes better defined through the ongoing Quadrennial Defense Review (QDR) and the Defense

Department strategic review we will have a better idea of what the future battle force mix should be.

9D. Senator LANDRIEU. Admiral McGinn, what is your best estimate for the required ship build rates on major Navy SCN programs to maintain the industrial base if that rate was guaranteed for the next 5 or 10 years? What is that estimate based on?

Admiral MCGINN. "Report on Naval Vessel Force Structure Requirements" sent to Congress by the Secretary of Defense in June of 2000 details the Navy's overall shipbuilding plan to maintain its force structure and the industrial base.

In accordance with the recent DDG-51 Program Industrial Base Study update forwarded to Congress in November 2000, the DDG-51 Program and its associated shipyards, Bath Iron Works and Ingalls Shipbuilding, require a stable procurement rate of three DDGs per year plus additional workload to maintain the surface combatant industrial base. For a surface combatant procurement rate of three ships per year, Ingalls and Bath can likely book the additional work required to maintain a stable workforce.

The lack of new submarine construction during the 1990s resulted in the loss of competition at the prime contractor level and degradation of competition at the sub-contractor level as many vendors left the market. The current production rate of one submarine per year, split between General Dynamics Electric Boat and Newport News Shipbuilding cooperating in a teaming agreement, is adequate to sustain the critical nuclear submarine industrial base. However, this minimal build rate has significantly increased submarine cost.

The aircraft carrier industrial base is sustained at its present level by procurement of an aircraft carrier every 4 to 5 years.

MULTI-YEAR PURCHASING OR ADVANCE APPROPRIATIONS

10. Senator LANDRIEU. Admiral McGinn and General Nyland, I must confess that, when I first came to Washington, I was shocked at how the Federal Government makes big purchases. Most state governments and, I would venture to say, all businesses do this in a completely different way and would go bankrupt if they do what the Federal Government does. In today's tight fiscal environment, we owe it to the taxpayers of America to get the most value for every dollar we invest in defense. I personally believe that through something like multi-year procurement or advance appropriations we could save big dollars in major weapons system purchases by providing some needed stability to the defense contractors. It seems to me that we should treat the acquisition of big ticket items, like warships the same way a business finances its capital programs, that is, on a cash outlay basis.

Do you agree with my assessment? If so, what new way of doing business could Congress implement to allow you to maximize each defense dollar spent?

What pros and cons do you see to the various approaches I mentioned above?

Admiral MCGINN. The primary concern of the Department is being able to increase the building rate to nine ships per year to maintain currently approved force structure over the long term. While we would prefer the traditional full funding approach, we believe this concern to be so fundamentally important, it warrants innovative financing techniques.

With respect to legislation, we believe that no special legislation is required to finance shipbuilding with advance appropriations as it is already Congressional practice to finance programs with this mechanism.

Advantages

- *Increased Number of Ship Starts.* Advance appropriations free up budget authority to enable the Department of the Navy to increase the number of ship starts in the near term. For instance, a ship that costs \$900 million could have \$300 million appropriated in the first year and the remaining \$600 million provided by advance appropriations over the next 2 years. This leaves \$600 million of headroom available in the first fiscal year of the appropriation to fund two additional ship starts of an equal cost.
- *Industry Confidence.* Because advance appropriations provide the full value of the ship, the shipbuilder has confidence in the commitment of the government to procure the ship, even though the funds are appropriated over several years.
- *More Efficient Industrial Base.* A firm commitment to build more ships provides stability to the industrial base, allowing shipbuilders to maximize

use of Economic Order Quantity procurements, re-capitalize their infrastructure and efficiently plan their work force loading.

Disadvantages

- *Long Term Commitment.* Advance appropriations require long term commitment to the shipbuilding plan. Failure to sustain adequate funding to the SCN account will cause disruption to ships already in construction, which will lead to increased costs and the inability to put new ships under contract. Even with advance appropriations, zero real program growth will not sustain the nine ships per year needed to maintain currently approved force structure. Less than zero real program growth would jeopardize putting new ships under contract or potentially other Navy programs.
- *Loss of Flexibility.* Emergent force structure requirements driven by new threats or technology opportunities will be more difficult to respond to, by putting different ship types under contract, due to legacy funding commitments.
- *Increased Exposure to Taxes/Rescissions.* In the past when taxes/rescissions are levied on shipbuilding programs, individual ships are only affected in 1 fiscal year. With appropriations provided over several years, individual ships can be impacted by general rescissions in each year funds are appropriated.

General NYLAND. Yes. The Marine Corps purchases items, such as the Advanced Amphibious Assault Vehicle, using both advanced procurement and multi-year procurement contracts. We rely on the Navy to procure warships and other ships that support our amphibious lift, Naval Surface Fire Support (NSFS) and Maritime Prepositioning Force (MPF) requirements. Generally speaking, the Marine Corps supports the Navy's fiscal strategy for the acquisition of warships and believes that it would be inappropriate for us to address the pros and cons for the procurement of these "big ticket items."

LPD-17

11A. Senator LANDRIEU. General Whitlow, it is my understanding that, in order to provide flexible response and assured access, our plans require the capability to rapidly deploy the equivalent of three Marine Expeditionary Brigades in amphibious shipping. I also understand that we are currently well below this requirement.

What is the current lift capability and what are the implications of this shortfall?

General WHITLOW. Amphibious lift is measured using the five "lift finger prints": Troops, Cargo, Vehicles, Aircraft, and Landing Craft Air Cushion (LCAC). The critical lift short fall of the required 3.0 Marine Expeditionary Brigade Assault Echelons (MEB AE) lift (fiscally constrained to 2.5 MEB AE) is in vehicle lift capacity. With the current 38 active and 1 NRF amphibious ships, the Navy's capability has been reduced to 2.1 MEB vehicle lift. The implications of this shortfall is that the Navy has to rely on the Amphibious Lift Enhancement Program (ALEP), which is 5 decommissioned LKAs and 4 decommissioned LSTs in deep reduced operating status. If required, these ships would take a minimum of 6 months to reactivate.

11B. Senator LANDRIEU. General Whitlow, to what extent does procurement of the LPD-17 class of ships address this shortfall?

General WHITLOW. Upon delivery of the 12th LPD-17 in the fiscal year 2010/2011 time frame, the Navy, with 12 LHA/LHDs, 12 LPD-17 and 12 LSD-41/49 class amphibious ships will have the required capability of embarking and employing 2.5 MEB (fiscally constrained) lift for troops and vehicles as well as meet the 3.0 MEB requirement for Cargo, Aircraft and Landing Craft Air Cushion (LCAC). The 12 LPD-17s enable the Navy to achieve this required fiscally constrained capability without the use of the ALEP ships.

11C. Senator LANDRIEU. General Whitlow, what are the implications of delaying acquisition of the LPD-17 class of ships?

General WHITLOW. Depending on the delay in acquisition, the immediate impact is the requirement to sustain at least six of the LPD-4 class ships (commissioned 1965-1971) at significant expense, as well as potential increases in industry/SCN costs associated with lengthening the LPD-17 program. An additional impact includes the delay associated with achieving the fiscally required 2.5 MEB AE lift (without use of ALEP).

Lastly but just as important is the indirect impact on reenlistment/retention of sailors and marines due the relatively poor quality of life conditions existent on the LPD-4 class ships.

SSGN CONVERSION

12. Senator LANDRIEU. Admiral Engelhardt, there are some in and outside of government who believe we should take advantage of the Trident submarines the Navy will be forced to decommission when we drop to START II Treaty levels. They maintain we should not throw that significant capital investment away but rather maximize its use for a modest cost by converting those boats to cruise missile submarines or SSGNs.

Do you believe this should be done? Why or why not?

Admiral ENGELHARDT. Yes. The Navy should convert the four Trident submarines to SSGNs. For a modest cost, the country would get four very capable platforms which would be available for 20 years after conversion. The converted ships would provide the warfighting commanders in chiefs with covert, high volume cruise missile strike capability and the ability to clandestinely deploy large numbers of Special Forces personnel for extended time periods. With its high operational availability, SSGN is a force multiplier allowing Battle Group Commanders flexibility to utilize ships and submarines in the Battle group to cover other essential tasks such surveillance, missile defense, and engagement with our allies. Additionally, these ships will be instrumental in future innovation in transformational payloads, weapon systems and vehicles for joint experimentation. Finally, the concept has low technical risk, leverages existing Trident logistic support and the costs are well known.

THEATER BALLISTIC MISSILE DEFENSE

13A. Senator LANDRIEU. Admiral McGinn and Admiral Kelly, while there is great debate about National Missile Defense in the country and Congress today, I believe everyone agrees on the need for an effective Theater Ballistic Missile Defense or TBMD. The Navy Theater-Wide program is on the cusp of becoming an operational capability of our Navy and, when deployed, will permit the United States to protect not only our own forces and those of our allies, but also the civilian populations of countries threatened by theater ballistic missile attack.

Will the current number of Navy ships and Vertical Launch System (VLS) cells enable the Navy to adequately meet wartime requirements while also picking up this new mission? If not, how many additional hulls or VLS cells do you believe are necessary?

Admiral MCGINN and Admiral KELLY. The current Defense Planning Guidance based on the 1997 Quadrennial Defense Review states Navy needs to maintain a 116 ship surface combatant force. Recent studies indicate that we may need more surface combatants to meet regional wartime requirements in the 2008 to 2015 timeframe. For crisis response our existing destroyers and modernized cruisers will be adequate to provide theater missile defenses in concert with other naval missions such as land attack, USW and force defense. If the Navy is assigned a wider role in missile defense, additional force structure may eventually be required. The current QDR analysis will help determine future wartime requirements.

13B. Senator LANDRIEU. Admiral McGinn and Admiral Kelly, what are the implications to the Cruiser Conversion Program?

Admiral MCGINN and Admiral KELLY. The Cruiser Conversion program is essential to rapidly deploying TBMD at sea. We need the advanced computers and improved Q-70 consoles to implement the computer programs necessary for missile defense.

QUESTIONS SUBMITTED BY SENATOR JEAN CARNAHAN

F/A-18E/F TO F/A-18C PART COMPATIBILITY

14. Senator CARNAHAN. Admiral McGinn and Admiral McCabe, I understand that the Navy's F-14 program is over three decades old. The Navy is now procuring more F/A-18E/Fs to replace these older generation aircraft. These airplanes will join the F/A-18Cs on our Navy's aircraft carriers.

Admirals, can you speak to the importance of establishing a Navy airfleet that is composed of airplanes that have common components and training characteristics?

Admiral MCGINN and Admiral McCABE. The Navy is committed to maximizing commonality in aircraft components. This approach lowers operations and support costs, decreases training requirements and allows the Navy to achieve economic order quantity goals.

In the case of F/A-18E/F, the Navy designed the aircraft with airframe commonality of 70 percent and avionics that are approximately 90 percent common with F/A-18C/D. This commonality extends to the existing support equipment, and reduces our overhead to provide training to aircrew and maintenance personnel.

Further, one should consider that the carrier is transitioning from a tactical aircraft (TACAIR) composition that is 33 percent F/A-18 to one that will be 72 percent F/A-18. The commonality is not only internal to the F/A-18 community but also overall to the TACAIR community where the advantages of supporting fewer types of aircraft can be realized.

FLEXIBILITY IN NAVAL PROCUREMENT OF F/A-18E/FS

15. Senator CARNAHAN. Admiral McGinn and Admiral McCabe, due to inflation and minor modifications mandated by the Pentagon, the Navy has stated that it will have to reduce the number of Super Hornets procured this year. On April 30, the Navy announced that it will change the procurement schedule of F/A-18E/F aircraft from 42 to 39.

Because of the significance of this program, do you anticipate room in future budgets to make up for the loss in the Navy's procurement of additional F/A-18s?

Admiral MCGINN and Admiral McCABE. The Navy has a requirement for 548 F/A-18E/F aircraft. Last year the Navy entered into a multi-year contract for the production of 222 aircraft through fiscal year 2004. This contract provided flexibility to increase or decrease aircraft quantity (+/-6 aircraft) in years fiscal year 2001 through fiscal year 2004 to meet emergent requirements. Unfortunately, current economic price adjustments and other unforeseen costs required the Navy to decrease procurement by three aircraft this year. If funds become available, the Navy intends to procure these three aircraft in order to remove costly legacy aircraft from the inventory and increase our combat capabilities.

JOINT STRIKE FIGHTER AND THE F/A-18

16. Senator CARNAHAN. Admiral McGinn and Admiral McCabe, the Joint Strike Fighter is another program scheduled to join the F/A-18s this decade.

How will this fighter's capabilities complement the mission of the F/A-18s?

Admiral MCGINN and Admiral McCABE.

- USN requirements are based on a balanced approach of increased firepower and survivability of F/A-18E/F and advanced stealth of CV JSF
- USN requires F/A-18E/F to replace aging inventory NOW (F-14, S-3 & older models of F/A-18)
- 2002 Carrier Air Wing (CVW)
 - F/A-18E/F is catalyst in providing the enabling blow
 - Strike early and deep: high value, C⁴I, weapons of mass destruction (WMD) targets, infrastructure
 - Attrite and dominate enemy air
 - F/A-18C leverages with SEAD, standoff weapons and high value asset protection (HVP)
 - As threat diminishes, F/A-18C penetrates closer (more survivable)
- 2012 CVW—Threat has increased, CVW capability paces threat
 - CV JSF is catalyst in providing the enabling blow
 - Day one strike against highly defended targets/advanced surface-to-air missiles (SAMs), and WMDs
 - Internal weapons bays (JSAM, JSOW & AMRAAM)
 - Supersonic delivery of precision weapons increases standoff ranges (IOC +3 years)
 - F/A-18E/F leverages carrying brunt of SEAD, standoff weapons and high value unit protection
 - As threat diminishes, F/A-18E penetrates closer (more survivable)
 - F/A-18E/F brings high payload capacity to the battle
- CV JSF brings:
 - Stealth—improved survivability, access and lethality

- Signature management and auto-routing denies pop-up threat
- Low observable and suppression enable access to highly defended targets
- Access by legacy aircraft limited by advanced SAMs
- 600nm range with internal ordnance minimizing tanking and support aircraft requirements
- Increased avionics
 - Open architecture
 - AESA Radar—self-protection/electronic attack and reduced signature
 - Distributed Electro-Optical/Infrared (EO/IR)
 - “Through the floor and wings” technology
 - Passive detection of targets/threats
 - Sensor fusion of multi-source tactical displays
 - Helmet mounted visor display—no HUD
- Lower Life Cycle Costs (LCC)
 - 17 percent savings in Operations & Sustainment (O&S) costs over F/A-18C aircraft
 - 3 CV JSF variant commonality in airframe, avionics and propulsion reduce LCC
 - Commonality in logistics support systems and training offer significant savings, reducing overall LCC
 - Projected 30–45 percent reduction in LCC over legacy aircraft
- Prognostic Health Management (PHM) monitors aircraft systems for wear and tear and impending failure in order to prevent mishaps

17. Senator CARNAHAN. General Nyland, please discuss the key benefits of fielding the Joint Strike Fighter by three of the Services. How will fielding this next-generation aircraft enhance inter-operability throughout the U.S. Armed Services in combat operations?

General NYLAND. JSF’s unique synergy of stealth, interoperability, range, payload, advanced sensors, and access to off-board information will bring unmatched lethality and survivability to the battlefields of the future. Commonality across the family of JSF variants is the key to the program’s affordability. All of the variants will share a common avionics architecture, a common fuselage, and a common core propulsion system—greatly reducing the manufacturing/procurement costs. The joint, common-aircraft approach central to the JSF program avoids three parallel development programs for Service-unique aircraft, saving \$15B in R&D costs over the next decade. Furthermore, commonality in logistics and training support systems offer significant additional savings and contribute to an overall reduction in total life cycle cost of 30–45 percent compared to legacy aircraft, a savings of \$110B in operating and support costs over 30 years.

QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

SURFACE FIRE SUPPORT

18. Senator SESSIONS. General Whitlow and Admiral Kelly, what is your assessment of the Navy’s plan to provide the fire support from the sea for Marine Corps Operations vis-a-vis the Marine Corps requirements included in the June 1999 General Rhodes letter to the Chief of Naval Operations?

General WHITLOW and Admiral KELLY. The Navy’s two-phased approach to meeting Operational Maneuver From the Sea (OMFTS) Naval Surface Fire Support (NSFS) requirements is a viable one. From both the Navy and Marine Corps perspectives, OMFTS concepts have placed an increasing emphasis on the need for capable NSFS assets. We realize that sea-based NSFS will be required to support joint operations, and integrate with expeditionary forces (whether Marine, Army, or other) operating over an extended littoral battlespace.

Near- and mid-term initiatives to meet NSFS requirements include: improving existing 5” guns, developing an extended range guided munition, introduction of a land attack missile (to include a Tactical Tomahawk cruise missile), and integration of C4I systems to support NSFS. Long-term initiatives include the introduction of the DD 21 surface combatant (with the Advanced Gun System), and the Advanced Land Attack Missile.

It is clear that our fire support roadmap needs to lead us to capable systems that provide the range, accuracy, lethality, and responsiveness necessary to support maneuver forces, from ship to objective and beyond. Furthermore, our naval fires must

be sustaining and possess the volume to achieve objectives ashore. To place an emphasis upon Naval Surface Fire Support (NSFS) during expeditionary operations means to shape the battlespace through the destruction, harassment, interdiction, and suppression of hostile forces.

SUBMARINE OPERATIONS IN THE LITTORALS

19. Senator SESSIONS. Admiral Engelhardt, although operations in the littorals are not new for submarines, the focus on submarines operating as part of a battle group in the littorals is evolving. What is being done to address the challenges in submarine weapon and combat system development to make them more effective operating against littoral threats and as part of a battle group operating in the littorals?

Admiral ENGELHARDT. In both the weapons and combat system cases, the Navy has made decisions to leverage the commercial development of commercial off-the-shelf technology (COTS) processing, based on the successes experienced in the Acoustic Rapid COTS Insertion (ARCI) program, in order to enable a more rapid delivery of effective capability. In the case of the ADCAP torpedo, the development and fielding of the ADCAP Mod 6 has greatly improved its intrinsic processing power. This has allowed the weapon to host more robust detection and tracking algorithms, and has laid the foundation for continuous improvement and implementation of future tactical software developments. This capability promotes ongoing efforts in the torpedo research and development community, which is largely centered on increased effectiveness to counter the wide range of threats likely to be encountered in the difficult littoral environment. In addition to this increased processing power, the Mod 6 improvement has also significantly reduced the noise signature of the torpedo itself, supporting the development of more effective tactics to counter steadily increasing threat capabilities. The follow-on modernization effort, the ADCAP Mod 7, named the Common Broadband Acoustic Sonar System (CBASS), will further increase the effectiveness of the ADCAP torpedo in shallow water.

The new generation Combat Control System (CCS), the CCS MK Block 1C ECP-4, also leverages the lessons learned from the ARCI program and will introduce a completely COTS-based CCS, which will be able to host software capability improvements delivered as often as annually using the ARCI-developed Advanced Processor Build, or APB process. This next generation CCS, which will begin delivery in fiscal year 2002, provides an improved Tactical Tomahawk (TACTOM) capability along with significant improvements in TLAM reliability and engagement planning. New algorithms will improve the submarine's ability to determine submerged contact solutions and manage complex surface contact situations. CBASS functionality will be delivered via a subsequent APB to support the CBASS IOC.

The submarine force is also engaged in an effort to improve information management. This allows our submarines to maintain the highest possible degree of tactical control in the high contact-density littoral environment. Improvements in sensors (visual, electronic, acoustic), processing, and data distribution all contribute to enhanced information management. To provide the connectivity for shared situational awareness through the Common Tactical Picture, the submarine force has two major communications modernization efforts in progress: the submarine Wideband Command, Control, Communications, Computers and Intelligence (C⁴I) Modernization Plan (WMP) and the submarine Narrowband C⁴I Modernization Plan (NMP). Although these two efforts differ in the space-based assets they utilize, they are common in their approach in that they transition all submarine communications from inefficient low-bandwidth legacy satellite information exchange services (IXS) to modern, high-bandwidth, commercial-standards-based Internet Protocol (IP) services.

SURF-ZONE MINE COUNTERMEASURES

20. Senator SESSIONS. General Whitlow, last year, your predecessor testified that the greatest mine warfare challenge was detection and clearing of mines from the very shallow water to the surf zone. He further stated that programs to get the people and marine mammals out of the minefield "have great promise, and will be ready to transition to demonstration and validation in fiscal year 2001."

What is the status of Navy and Marine Corps very shallow water and surf zone mine countermeasures programs, and what is the operational impact of the present programs versus future programs?

General WHITLOW. The Navy has the responsibility for mine countermeasures (MCM) in the Very Shallow Water (VSW) (40'-10' water depth) and Surf Zone (10'-

0' water depth) regions; the Marine Corps has the responsibility for MCM from the High Water Mark (HWM) inland. However, the Marine Corps' programs will not be discussed in this response. Each region and resources currently available to conduct MCM will be discussed separately.

In the near-term (for the next 10, possibly 15 years), the Navy must rely on Sea, Air and Land (SEAL) Specialists from Navy Special Warfare (NSW) and divers/mammals from the VSW Detachment to clear mines/obstacles in the Very Shallow Water and Surf Zone regions. We will not be able to remove the man and/or mammal from the minefield until far-term systems can be developed, tested, and subsequently fielded.

Regarding the Very Shallow Water region, in 1998 the Navy and Marine Corps initiated a concentrated effort to address long-standing VSWM Countermeasures deficiencies highlighted during Operation Desert Storm. A dedicated VSW MCM detachment was established. It was manned with Navy SEALs, Navy Explosive Ordnance Disposal technicians and Marine Corps Reconnaissance combat swimmers. The Detachment is chartered with rapidly responding to emergent contingencies worldwide and to act as a "warfighting laboratory" for evaluating and assessing the operational utility of the latest promising VSW MCM technologies.

The Detachment has three primary components: the diver, marine mammal, and unmanned underwater vehicle platoons. While the Detachment has developed effective tactics and techniques, the most effective capability still relies on divers and dolphins for performance of this complex mission. It remains our intent to migrate this mission to unmanned underwater vehicles (UUV).

With the establishment of the Detachment, the Navy resourced a focused acquisition program to field equipment to enable divers and dolphins to safely and effectively conduct minefield mapping and clearance in the very shallow water region. Diver and marine mammal system developments have significantly improved our capabilities.

First, a low magnetic and acoustic signature Underwater Breathing Apparatus was fielded which gives the VSW diver adequate time to conduct minefield-mapping operations. This dive rig was based on a commercial off the shelf design with some system modifications. This acquisition strategy permitted fielding of this tool within 24 months of program initiation.

Second, a marine mammal system achieved a preliminary operational capability in January of 2000 allowing for rapid, low visible minefield mapping. The performance of the marine mammal system enables relatively high speed/high confidence minefield mapping, including detection and classification of partially to fully buried mines.

Third, an integrated underwater navigation and sonar system is nearing acquisition program completion and is scheduled for delivery by September of 2001. This visual display tool will allow the diver to conduct precise minefield mapping including high confidence standoff mine classification.

While great strides have been made in enhancing diver and dolphin systems since the early 1990s, several areas of the mission continue to challenge us. Specifically, mine neutralization remains a hazard to the very shallow water divers and dolphins. A very limited capability exists but only in highly permissive, low sea state and ocean floor migration environments. The lack of man-portable, command actuation capabilities limits tactical options available in trying to neutralize the VSW mine threat at a precise point in time without compromising intended landing points against hostile shorelines. Also, lane marking of areas cleared continues to be an area of operational challenge.

While order of magnitude improvements in capability have been realized by fielding three VSW MCM in just over 3 years, the ultimate goal remains to remove these man-in-the-loop systems as technology matures. The Office of Naval Research has invested \$120M in Future Naval Capabilities research to "push" these and related technologies.

In the fiscal year 2001 Navy budget, the Navy has programmed funding to begin acquisition of small, affordable UUVs to conduct minefield mapping. This acquisition program started in October 2000, and VSW MCM detachment personnel are currently operating prototype vehicles. Leveraging the ongoing technology development and demonstration efforts from the Office of Naval Research enables actual hardware to be in the operator's hands relatively early in the acquisition process. This facilitates effective requirement definition and ultimately a highly balanced and effective acquisition process. The detachment is currently operating their prototype unmanned vehicles, and an initial operating capability is scheduled for fiscal year 2005. A funded project will be initiated in October 2002 to add mine identification capabilities to the small unmanned underwater vehicle. To improve safety and effectiveness in other operations involving hazards to personnel, the Navy is also

investigating the utility of expanding the use of small unmanned underwater vehicles to broader areas of undersea search and survey.

The Surf Zone is certainly the most difficult region of waterspace being addressed in the Navy's efforts to produce an "end-to-end" MCM capability, from deep water to dry land.

The goal for the far-term is to develop an in-stride mine clearance capability for the surf and beach zones to enable Operational Maneuver From the Sea (Expeditionary Maneuver Warfare) and Ship to Objective Maneuver. Teaming with the Office of Naval Research, industry, academia and Navy laboratories, the Navy is continuing to develop potential unmanned airborne and underwater sensors (to improve our capability to locate minefields) and weapons systems (to neutralize the mines they find).

Regarding future surf zone systems, the Office of Naval Research (ONR) is presently conducting an evaluation of three potential breaching (kill mechanism) solutions to the surf zone mine threat. These potential solutions are aircraft or naval surface fire ship based:

- Aircraft (Carrier) based:
 - HYDRA-7 (Lockheed-Martin)—reactive high velocity darts (for mines) or explosively driven impactors (for obstacles) delivered by Wind-Corrected Tactical Munitions Dispenser (WC-TMD)
 - Mine/Obstacle Defeat System (Boeing)—penetrator darts (for mines) or continuous rod warheads (for obstacles) delivered by Joint Direct Attack Munition (JDAM)
- Ship (Destroyer) based
 - 5" Best Buy Projectile (SAIC)—chemical/reactive darts (for mines) and continuous rod warheads (for obstacles) delivered by variants of the 5" Best Buy projectile

After the Concept & Technology Development phase ends in fiscal year 2003, a determination will be made regarding which potential far-term system will transition to an acquisition program. With current available data, it is expected that a far-term breaching system will be fielded to the fleet as early as 2010, with a more realistic time frame of 2015.

Though the surf zone is the most challenging mine warfare environment, I am confident we will develop the systems and the tactics to minimize its impact on our ability to maneuver and the danger it poses to the lives of our marines and sailors.

COOPERATIVE ENGAGEMENT CAPABILITY

21. Senator SESSIONS. Admiral Kelly, your quarterly reports have indicated Cooperative Engagement Capability (CEC) is making progress, and has a solid test plan with sufficient resources. However, it is not clear what technical hurdles still remain and the Navy's plan for implementing the CEC into deploying battle groups.

Would you explain to the subcommittee the Navy's evaluation of the scope of the remaining technical issues with the Cooperative Engagement Capability equipment and software, and include a brief update on the program status?

Admiral KELLY. CEC OPEVAL was conducted in May 2001. Official results are not expected until August 2001. However, based on performance in previous underway tests to date, positive results are expected. Our focus now is to rapidly deploy this proven capability in as many Carrier Battle Groups (CVBGs) and Amphibious Readiness Groups (ARGs) as we can afford. At the same time we will finish E-2C Hawkeye 2000 computer program development and testing and begin to add TBMD functionality in the next versions of the CEC programs.

22. Senator SESSIONS. Admiral Kelly, do you have sufficient funding to complete the scheduled fiscal year 2001 CEC testing?

Admiral KELLY. Yes. Testing of CEC will occur beyond fiscal year 2001. CEC test plans support test requirements within current budget guidelines. They are focused on follow-on testing for the E-2C and improved carrier/amphibious ship combat system (SSDS Mk 2) configurations.

MINE WARFARE DEDICATION FORCES ABILITY TO RESPOND TO CRISIS

23. Senator SESSIONS. General Whitlow, the U.S.S. *Inchon*, is over 33 years old and it has been reported that it takes a major maintenance effort to get underway even when the schedule is known well in advance. In addition, the mine hunting ships, MHCs, are reported to have lower than planned propulsion engine availabil-

ity, and CINC TRANSCOM testified that there is not enough strategic lift capability to transport the mine hunting ships.

What are the operational impacts of the readiness of the U.S.S. *Inchon* and the MHC ships, what is your assessment of your ability to provide crisis response, and what is your plan to correct the deficiencies?

General WHITLOW. Certainly *Inchon's* operational availability is troubling. At 33 years, *Inchon* has long exceeded her original design life and is nearing end of service life. Further, the investment required to properly maintain and modernize such an aging special purpose ship is significant. Accordingly, we the Navy and Marine Corps Team are at a decision point to determine how best to proceed with this issue. For this reason we began a Mission Area Analysis (MAA) Study this spring to determine if there is a need for a follow-on MCM Command, Control and Support Ship or its capabilities. This study will identify the requirement for sea borne command and control in support of the currently programmed MCM force. If there is a requirement for an MCS or its functions, solutions should be cost effective, technically feasible and provide the necessary operational utility to support a balanced MCM force.

To answer the second part of your question, the MHC-51-class Coastal Minehunter Isotta-Frachini (I/F) propulsion engine reliability is far less than desired. The Navy's experience with the main propulsion and the diesel generator engine selected for the MCM-1 and MHC-51 Class ships has been problematic since ship construction. Exaggerating the poor reliability and deficient durability of the I/F engine, is the movement in the past decade of Navy SMCM ships from a "garrison" disposition, to a force compliment of forward deployed ships and CONUS-based ships that routinely deploy. Accordingly, the Navy has engaged the I/F original equipment manufacturer (OEM) to improve its internal QA and continues to incorporate incremental improvements to the I/F engine as part of the fleet Modernization Program (FMP). This said, the I/F's operational availability (Ao) remains at an unacceptable level and thus any significant increase in the SMCM engine Ao will require either a major product improvement program to the older technology I/F, or a replacement OEM engine. Accordingly, recognizing that significant technological improvements in high speed marine diesel performance, reliability and durability have been realized since the original engine selection for the MCM-1/MHC-51-class ships, the Navy embarked on a Business Case Analysis (BCA) study. This BCA will provide the cost/benefit analysis and technical feasibility of replacing the existing IF with a different OEM, or a major product improvement to achieve the current diesel industry standard Ao.

SUFRACE SHIP SELF-DEFENSE

24A. Senator SESSIONS. Admiral Kelly, surface ship self-defense has been a particular focus of Congress for a number of years. This subcommittee has initiated additional funding for ship self-defense programs in the past including the missile decoy, NULKA, and the Block 1B Close-in Weapons Systems upgrade.

What is your assessment of the present ship self-defense capabilities and programs, and have you adjusted any programs as a result of the attack on the U.S.S. *Cole*?

Admiral KELLY. The Navy remains capable against today's threats and the procurement of new and upgraded systems will ensure ship self-defense capability continues to pace the threat. Specifically, in fiscal year 2001 additional R&D funds were used to complete NULKA's integration with the Advanced Integrated Electronic Warfare System (AIEWS), and to develop a detailed infrared (IR) payload deployment system. Additional funding also facilitated at sea tactical testing and procured 17 more NULKA rounds, for a total of 99 for the year. This produced cost savings of \$25K per round. In addition, funds were added the Phalanx Close-In Weapon System (CIWS). This additional money is projected to procure CIWS Block 1B upgrade kits. These upgraded weapon systems are able to engage the most demanding anti-ship cruise missiles in the world today. Additionally, these systems provide anti-terrorism force protection capability as they are highly effective against small, fast boats and low, slow aircraft. These capabilities demonstrate the Navy's commitment to fielding advanced multi-function weapon systems to stay ahead of today's threat.

Since the U.S.S. *Cole* bombing, the Navy has reprioritized the fiscal year 2002 budget to bolster anti-terrorism force protection. Some of the measures include an adjustment to the Inter-Deployment Training Cycle to expand an already aggressive force protection/anti-terrorism training package. This is being accomplished through both training and procurement. The fleet has incorporated realistic anti-terrorism/

force protection scenarios into its training regime. Drills are being run routinely and a unit's reaction to various threats evaluated continuously throughout the Inter-Deployment Training Cycle (IDTC) and during scheduled deployments. In addition, the Navy has procured several anti-terrorism/force protection systems to include new harbor patrol craft, communications equipment, and Waterside Security Systems to provide in depth defense to ships pierside in their homeports. Finally, base security has been enhanced through both training and procurement to protect government property and personnel.

The Navy will continue to examine and invest in state-of-the-art security and force protection systems. Additionally, the Navy will continue to examine and re-evaluate operational doctrine and training to identify strengths and/or additional requirements to strengthen our current force protection and security posture.

24B. Senator SESSIONS. Admiral Kelly, will the AIEWS program significantly improve the ship self-defense capability of surface ships?

Admiral KELLY. AIEWS will provide added protection that directly contributes to the Navy's AAW Capstone Requirements Document. It specifically complies with Defense Planning Guidance Requirement to sustain capability against traditional and non-traditional threats. AIEWS is essential for defeating mid- and long-term anti-ship cruise missile threats as described in National Intelligence Estimates. A classified brief on specifics can be provided, but essentially, the active increment (Inc) 2 version of AIEWS combined with NULKA will be an essential element to defeat all known near- and far-term threats.

24C. Senator SESSIONS. If so, what is your plan to field the system?

Admiral KELLY. AIEWS provides the only soft kill capability against mid- and far-term anti-ship cruise missiles. A classified brief on specifics can be provided. Fleet introduction is on track for fiscal year 2004. The current fleet introduction schedule is fiscally constrained. The system will be installed on CGs during conversion, DDGs, LPD-17s, CVNs and DD 21.

SUBMARINE COMMUNICATIONS CAPABILITY

25A. Senator SESSIONS. Admiral Engelhardt, submarines are the ultimate stealth platform. Submariners are masters of covert operations. To a submariner, quiet operations means survival. However, Admiral Bowman wrote in the Spring 1999 issue of *Undersea Warfare* that one of the challenges of the 21st century is for submariners to "get connected." In addition, Admiral Fages testified before this subcommittee that near-real time communications capabilities is critical for submarines to send and receive vital information.

What efforts do you have in progress to improve the communications capabilities of submarines and at what rate will you be installing those capabilities?

Admiral ENGELHARDT. The submarine force has two major communications modernization efforts in progress: the submarine Wideband C4I Modernization Plan (WMP) and the submarine Narrowband C4I Modernization Plan (NMP). Although these two efforts differ in the space-based assets they utilize, they are common in their approach to transition all submarine communications from inefficient low-bandwidth legacy satellite information exchange service (IXS) to modern high-bandwidth commercial standards based Internet Protocol (IP) services.

The submarine Wideband C4I Modernization Plan (WMP) synchronizes the procurement and installation of the Submarine High Data Rate (SubHDR) antenna and below decks extremely high frequency (EHF) medium data rate (MDR) terminals with space-based assets (i.e., Milstar II and GBS). In addition to EHF MDR and GBS capability, the SubHDR system will provide SHF capability.

EHF MDR provides the submarine the covert, high-bandwidth communications critical to success as a stealth platform in support of IT21 Battlegroup deployments.

Wideband C4I capability is currently fitted on six SSNs and is being fielded at the rate of two SSNs per deploying battlegroup (nominally 10 SSNs per year) with all SSNs having this capability in early fiscal year 2006.

The Narrowband Modernization Plan (NMP) utilizes UHF satellite communications (SATCOM) to provide submarines access to unclassified (NIPRNET) and classified (SIPRNET) internet protocol (IP) services, although at a significantly lower data rate than that available through the wideband services. Currently, over 20 SSNs have been fitted with this capability, and the program plan in place will have all submarines fitted with this capability by the end of calendar year 2003.

25B. Senator SESSIONS. Admiral Engelhardt, are there any key communications capabilities that are available but not fully fielded that reduce the risk to submariners operating in the littorals?

Admiral ENGELHARDT. Yes, specifically EHF and improvements to communications at speed and depth capability that are currently under development.

EHF communications provides the submarine covert two-way communications important to maintaining a stealth posture while operating in the littorals. Currently 35 SSNs have been outfitted with this capability. The remaining 20 SSNs are programmed to receive this capability as part of the Wideband Modernization Plan (WMP) between now and early fiscal year 2006.

There are currently two major improvements under development that will dramatically enhance the submarine's ability to communicate while operating submerged in the littorals. The first of these is a development effort called on-hull ELF designed to provide the submarine with a hull-mounted antenna that will access the communications services provided by extremely low frequency. This technology is still under development and has significant challenges to overcome, the current program plan supports fielding this capability in the fiscal year 2007 timeframe.

The second is a joint Office of Naval Research (ONR)/Defense Advanced Research Projects Agency (DARPA) sponsored development effort called the multi-element buoyant cable antenna (MBCA). The MBCA is a towed communications array that when deployed is flush with the ocean's surface. The MBCA technology will provide the submarine with two-way UHF communications while operating submerged without the need to raise a mast above the ocean's surface and risking counter-detection.

SUBMARINE INFORMATION PROCESSING CAPABILITY

26. Senator SESSIONS. Admiral Engelhardt, the submarine community has taken the lead in rapidly inserting improved computing capability into their detection and processing systems.

Are there operational results that would support continuing the acoustic rapid commercial off-the-shelf (COTS) insertion programs and do you have plans to expand the program to include other systems?

Admiral ENGELHARDT. Based on compelling operational performance, the Navy has capitalized the successes experienced in the Acoustic Rapid COTS Insertion/Advanced Processor Build (ARCI/APB) program, to leverage commercial development of COTS processing to enable more timely delivery of effective capability across the spectrum of submarine electronics. Examples of these real-world ARCI/APB mission successes are available from us upon request.

A key example of our commitment to implement the ARCI/APB process is the Combat Control System (CCS), MK 2 Block 1C ECP-4, which will introduce a completely COTS-based CCS beginning in fiscal year 2002. This upgrade will host software capability improvements, similar to ARCI that will be delivered as often as annually using the ARCI-developed Advanced Processor Build (APB) process.

There are two critical issues here:

(i) Information processing capacity. Littoral waters present an overwhelming volume of data to the operator; high contact densities operating in close proximity, complex acoustic environments, high volume communications and RF spectrum emissions. Processing this data provides important and revealing information of tactical value as well as serving to ensure the safety of our ships operating in these areas.

(ii) Information management capability. Submarines, like other ships, employ several systems to collect data. Processing that data into useful information and providing it in near-real time to systems, not just onboard but offboard, to the battlegroup or to the shore-based analyst, is a force multiplier.

The success of the ARCI program and the APB process to consistently deliver capability improvements as well as developing and sharing knowledge across all platforms has convinced us of the value of the process. We have shared our business plan with both the surface and air communities and continue to assist them in developing a similar process.

MARINE CORPS HELICOPTERS

27. Senator SESSIONS. General Nyland, it is clear that vertical lift, or rotary wing requirements play a critical role in support of USMC operational concepts. While a lot of attention has focused on issues associated with the V-22 program, the com-

mittee is also aware of the ongoing 4BN/4BW program that will upgrade and extend the life of existing UH-1 utility helicopters and AH-1 attack helicopters.

First, please explain how requirements for vertical lift are balanced between the V-22 and the H-46; Second, why is it necessary for the Marine Corps to maintain UH-1 and AH-1 aircraft when the Army is in the process of retiring these same aircraft, and wouldn't it make sense to promote common platforms across the services since they will operate in a joint environment?

What is the status of the 4BN/4BW program for the UH-1 helicopter and please include comments on recent press reports of cost growth/overruns?

General NYLAND. The Marine Corps has looked closely at inter-service commonality (procuring a marinized version of the Army's AH-64 and the Navy's MH-60) vice intra-service commonality (procuring the common to each other AH-1Z and UH-1Y) and determined that the H-1 Upgrade Program is the most cost effective option that meets the operational requirement and fits the existing table of organization (T/O) of the Marine Light Attack Helicopter Squadrons (HMLAs).

While other aircraft mix options meet the Marine Corps' operational requirements, the increased cost to procure, maintain and the manpower to operate other, uncommon aircraft (e.g. CH-60, AH-64) over the life of the program is not a cost-effective alternative for the Marine Corps. Additionally, the larger logistics footprint, increased spares requirement and especially the increased manpower requirements that result from mixed platforms was determined to be unaffordable. Fielding two disparate types of aircraft vice two variants of a common aircraft will have a negative impact on the Marine Corps' ability to train the required number of personnel, deploy aboard amphibious ships and move aircraft via strategic airlift.

The operational and logistical flexibility offered by the 85 percent commonality between the UH-1Y and the AH-1Z will pay incredible dividends for the future combat capability of the Marine Corps. When combined with the fact that repeated independent analyses has shown this option will save the Department of the Navy procurement and operating & support cost over all other options, the H-1 Upgrade Program remains the clear choice for the United States Marine Corps. The H-1 program will sustain the Marine Corps utility and light attack helicopters until the 2015 timeframe giving the Joint Rotorcraft Development Strategic Studies Group (JRDSSG) time to identify, develop, and field a suitable "joint" replacement aircraft.

Status of the H-1 Program

The H-1 Upgrades Program will yield the U.S. Marine Corps' next-generation attack and utility helicopters, the AH-1Z and the UH-1Y. AH-1Z aircraft #1 (Z#1) is the first engineering and manufacturing development (EMD) flight test article. Since its first flight on 7 December 2000, Z#1 has flown over 100 flight hours and logged more than 250 total rotor turn hours. Testing to date has focused on handling qualities, loads, and vibrations in various flight and ground test configurations (with varying centers of gravity and gross weights). Z#1 has already flown beyond the aircraft envelope airspeed and maneuvering limits of the currently fielded AH-1W and UH-1N helicopters. Overall, Z#1 has demonstrated flight characteristics better than predicted in the engineering models and has achieved all these parameters with the stability and control augmentation system (SCAS) both on and off. Z#1 was successfully moved to NAS Patuxent River, MD, via C-5, in an air transportability demonstration on 31 March 2001. Z#1 returned to flight operations at NAS Patuxent River on 3 May 2001.

The rest of the EMD flight test aircraft, AH-1Z #2 and #3, UH-1Y #1 and #2, are production representative and will be configured with digital, 1553 compatible glass cockpits as part of their Integrated Avionics Suite (IAS). UH-1Y aircraft #1 (Y#1) transferred to the BHTI Flight Test Research Facility, Arlington, TX, on 17 June 2001. Electrical power was applied for the first time on 26 June 2001 marking the beginning of the IAS Functional Test. Y#1 is scheduled for ground runs beginning in October 2001 and for its first flight in December 2001. The remaining three EMD test aircraft are now in the final stages of manufacturing and assembly. These aircraft will transfer from Bell Helicopter Textron Inc. (BHTI) final assembly to flight test later this year. The H-1 Upgrade flight test program operational evaluation (OPEVAL) will be complete in 2004 and AH-1Zs/UH-1Ys will begin arriving in the operational fleet by 2005.

Cost growth

The program reported a cost overrun in October 2000. A program deviation report was submitted in January 2001. Funding to the proposed new baseline was provided by fiscal year 2002 PBD-113, which realigned \$189.7M from APN-1 into RDT&E, slipping low rate initial production (LRIP) 1 year to fiscal year 2003. However, LRIP quantities were increased from 20 to 28, thus preserving the fleet's initial oper-

ational capability in fiscal year 2006. The new OTB was placed on contract on 26 January 2001.

LAND ATTACK STANDARD MISSILE

28A. Senator SESSIONS. Admiral Kelly, the Navy is currently developing a Land Attack Standard Missile (LASM). The General Accounting Office report, "Improved Littoral Warfighting Capabilities Needed," stated the unit cost of LASM is estimated to be \$400,000 versus the previously estimated cost of \$275,000.

Does the Navy agree with the GAO estimate of the unit cost, if not, then what is the updated estimated unit cost of LASM?

Admiral KELLY. The unit cost goal for LASM, based on fiscal year 1997 dollars, is \$275,000. This price was based on procuring 125 missiles per year but did not include a then undefined requirement to add a Selective Availability Anti-Spoofing Module in the Global Positioning System receiver. The GAO report estimated the cost at \$400,000 based on the current Navy budget for procurement that does not buy 125 missiles per year. Additionally, the LASM cost estimating model will not be finalized until after Critical Design Review scheduled for later this calendar year. The Navy is confident that given sufficient procurement dollars and quantities, we will achieve the objective of \$275,000.

28B. Senator SESSIONS. If the Navy estimate of unit cost has risen, what impact will that have on the total number LASM that will be funded, both in terms of time to fund and total number funded?

Admiral KELLY. Our unit cost estimate for LASM has not risen. The Operational Requirements Document requires achievement of a unit cost of \$275,000 at a missile procurement rate of 125 missiles per year. This cost does not incorporate the Selective Availability Anti-Spoofing Module in the Global Positioning System receiver. Costing for that option is not complete.

Our procurement objective for LASM remains 800 missiles. Navy intends to procure these as rapidly as funding permits.

28C. Senator SESSIONS. Are there submarine plans to expand their land attack capability to include other weapons in addition to Tomahawk?

Admiral KELLY. The Submarine Force is procuring alongside the Surface Force, a Tactical Tomahawk (TacTom) arsenal. We continue investment through our Subtech programs into future strategic concepts and warfighting systems.

Our submarines will expand land attack capability in parallel with Joint Warfare doctrine and weapons development. Our Subtech organization identified that development of a universal weapons encapsulation design for submarine launchers provides submarines with a reliable engineering method for deploying premier joint service land attack weapons forward with stealth and surprise. Submarine architecture is ready for more striking weapons in addition to our programmed TLAM and TacToms.

The Advanced Land Attack Missile (ALAM), Army/Navy Tactical Missile (TACMS), and supersonic missile design weapons are examples of the combat capabilities that we are considering.

28D. Senator SESSIONS. What was the total Navy investment by warfare area in the NTACMS program and will the investment leverage Navy future land attack systems? If so, how?

Admiral KELLY. The Navy invested \$24 million in the ATACMS program from 1994 to 2000. \$14 million was used to conduct a demonstration flight of the ATACMS Block I missile. Additional money was spent determining and improving the ATACMS capability in a Navy version and as part of the ALAM analysis of alternatives. ATACMS was not selected due to the relatively high cost and insensitivity of propellants and warheads. In 1999, Navy requested Congress authorize the termination of the NTACMS program and realign the remaining \$11.3 million to the Land Attack Standard Missile (LASM) effort. \$7.4 million was approved for LASM pre-Engineering and Manufacturing Development effort for LASM. This request also included funding for the Advanced Land Attack Missile Analysis of Alternatives (AoA). The AoA is completed, and the report is in review.

28E. Senator SESSIONS. Is the Navy pursuing programs which would give the LASM the capability to kill moving targets? If so, what is the estimate of how much Navy investment would be required to include this additional capability of LASM?

Admiral KELLY. Yes. On May 4, 2001, RADM Rodney Rempt, N76, sent a letter to Director, Force Development, Office of the Deputy Chief of Staff (Army) for Programs (DAPR-FDZ) and Deputy, Systems Management and Horizontal Technology Integration (SAAL-ZS) discussing a possible demonstration of the Brilliant Anti-Armor (BAT) submunition in the Land Attack Standard Missile (LASM). On June 5, 2001, RADM Kelly, N76B, sent a letter to Program Executive Offices for Surface Strike and Theater Surface Combatants (PEO(S) and PEO(TSC)) requesting development of a cost and schedule for conducting the Search and Destroy Armament (SADARM) demonstration and/or BAT. The Navy expects to make a decision on this demonstration by August 2001.

29. Senator SESSIONS. General Nyland, will Navy and Marine Corps plans for mine warfare capabilities enable timely access for operations?

General NYLAND. Eventually, yes. The objective is unencumbered maneuver in the littorals; making mines and obstacles merely a nuisance. This is a very difficult undertaking for which there is no single answer; therefore, a system of systems approach is required. The operational environment is divided into four regions: deep water (200 ft. and deeper), shallow water (200–40 ft.), very shallow water (40–10 ft.) and, finally, from the beginning of the surf zone (10 ft.) through the beach exit zone. The Navy is responsible for the area from the deep water to the landward limit of the Landing Craft Air Cushion (LCAC) Landing Zone (CLZ) along seashores, and farther inland where waters are navigable from the sea. The Navy has been working to develop and field capabilities for the deep and shallow water, and an organic capability for the Carrier Battle Group which should reach initial operational capability in 2005. In very shallow water, we currently have an extremely limited capability with the Very Shallow Water Detachment (VSW Det). This capability is made up of Navy SEALs, Explosive Ordnance Disposal and reconnaissance marines. The VSW Detachment's capability has the potential to improve with the transition of several Office of Naval Research (ONR) initiatives to advanced research and development during the 2002–2005 timeframe. In the region from the surf zone through the Beach Exit Zone (BEZ) we are severely challenged. The Marine Corps and the Navy are actively engaged with the ONR to address this challenge.

30. Senator SESSIONS. Admiral McGinn, our challenge is to review the development and procurement of programs to ensure our forces are adequately equipped for future operations. The most common parameters to use in this type of review are the projected requirements for future capabilities versus the program cost and performance indicators. Although it is easiest to make evaluations from the perspective of the individual program or its specific warfare area, future operations require us to broaden our perspective to include joint and coalition, as well as, cross-warfare specialty operations.

The following is a key question which will assist us in our program reviews and evaluations:

What is the Navy's plan for ensuring P-3 and SH-60 aircraft capabilities and availability?

Admiral MCGINN. P-3 capability sustainment. The Navy and OSD have been analyzing alternatives for sustaining the capability the P-3 provides since July 2000. Preliminary results of that Analysis of Alternatives point to a manned aircraft (i.e., Multi-mission Maritime Aircraft (MMA)) as an essential element of the solution. The analysis also pointed away from service life extensions (either a complete remanufacture or an interim Service Life Extension Program (SLEP)). An interim SLEP offers no improvements in operating and support (O&S) cost or availability while the remanufacture option that provides limited improvements in O&S is estimated to cost nearly as much as a new aircraft. As a result, the Secretary of the Navy targeted the 2010–2012 timeframe for MMA initial operating capability and realigned funds previously programmed for SLEP to MMA.

In addition to manned aircraft, Unmanned Aerial Vehicles (UAV) like Global Hawk are being examined as candidates to perform some or all missions currently performed by P-3s. That analysis is currently planned to complete this fall and is very promising but carries a significant resource requirement in addition to MMA.

As P-3s reach the end of their fatigue life, the Navy plans to inspect each airframe and perform repairs. The Navy currently estimates that these Structurally Significant Inspections (SSIs) will be adequate to extend the service life 600 flight hours or 1 year, whichever occurs first. The Navy estimates that as many as six SSIs can be performed before the airframe must be retired. This will help bridge the capability gap until MMA attains IOC and any UAV solutions can be implemented.

SH-60 capability sustainment. The Navy and OSD have been analyzing alternatives for sustaining the capability that the H-60 series naval helicopter provides. SH-60B/SH-60F parts obsolescence and aircraft fatigue life are currently being studied.

As SH-60Bs reach the end of their fatigue life, the Navy plans to inspect each airframe and perform repairs as required. The Navy currently plans to extend the service life of these airframes from 10,000 to 12,000 hours. At current usage, this effectively postpones retirement by approximately 4 years, with the first SH-60B retiring in the fiscal year 2005 timeframe.

The capabilities programmed for the SH-60R remains valid for the sustainment of Maritime Antisubmarine Warfare and Anti-Surface Warfare dominance. However, a cost analysis of the acquisition strategy of the SH-60R pointed away from a complete remanufacture as was previously planned. The remanufacture option provided limited improvements in O&S and cost nearly as much as a new aircraft. As a result, the Navy's Acquisition Executive has approved a "build new" acquisition strategy.

31. Senator SESSIONS. Is the Marine Corps' plan for recapitalization and modernization adequate to support the tempo and nature of expected operations?

General NYLAND. The Marine Corps has recapitalization and modernization plans in place that will adequately support the tempo and nature of expected operations. We have a viable plan to field the new and improved equipment we require in order to support our mission, however, I am concerned about the slow pace of our modernization efforts. While our Nation's current strategy and force structure may change, it is clear that a sustained increase in resources is required to yield the operational strength, flexibility, and resilience we envision in both the short and the long-term.

As described in my testimony, the Marine Corps expects the future to be "a time of great uncertainty and instability." The capstone concept of Expeditionary Maneuver Warfare (EMW) prepares the Corps to meet the challenges and opportunities of a rapidly changing world by setting an "axis of advance" for future enhancements. The recapitalization and modernization efforts are aligned with EMW and when implemented, will bolster our ability to apply the emerging principles of modern warfare—speed, stealth, precision, and sustainment.

Our recapitalization and modernization plan relies on the synergistic convergence of many programs, to include the MV-22 Osprey tilt-rotor aircraft, Advance Amphibious Assault Vehicle (AAAV), Joint Strike Fighter (JSF), Medium Tactical Vehicle Replacement (MTVR), Logistic Vehicle Systems Replacement (LVSF), Lightweight 155mm Howitzer (LW155), and the *San Antonio*-class Dock Landing Ship (LPD-17). These programs will enhance the Corps' firepower, mobility, mission flexibility, and are integral to the concept of power projection. The Marine Corps has carefully plotted a course for the future. If our currently planned programs are properly funded, we will see a convergence of transformation and modernization capabilities in our Marine Air Ground Task Forces (MAGTFs) starting in 2008 that will revolutionize our expeditionary capabilities.

To accelerate the modernization programs required to maintain the technological advantage we currently enjoy on the battlefield, reduce our operating costs, and allow marines to spend more time doing what the American public expects of them—train and deploy in defense of our vital national interests; the Marine Corps requires an additional \$1.8 to \$2.0 billion sustained for the next 8 to 10 years. The fiscal year 2002 requirement has been reduced to approximately \$1.4 billion as a result of increases provided by the administration during wrap-up of the fiscal year 2002 Amended President's Budget. With your consistent support we can achieve our goals and provide our Nation with a Marine Corps that will be well on the road to dramatically transformed expeditionary capabilities.

32. Senator SESSIONS. General Nyland, are there adequate capabilities to support joint and coalition operations, as well as, operations among diverse Navy and Marine Corps units?

General NYLAND. The Marine Corps, as a matter of course, is always transitioning for the future. The recent publication of Marine Corps Strategy 21 (MCS 21) and the impending publication of our capstone operational concept, Expeditionary Maneuver Warfare, outline the capabilities that the Marine Corps will need to maintain our operational edge in the future.

MCS 21 states, "With our experience in coordinating the multidimensional elements of our air-ground task forces and our close relationship with the Navy, Marines instinctively understand the need for and the logic and synergy behind, joint and multinational operations . . . and, as part of or leading a joint or multinational

force, defeat our Nation's adversaries." The Marine Corps has capabilities today to enable our scalable air-ground task forces to support joint and coalition operations, as well as, operations among diverse Navy and Marine Corps units. Further, it has identified and is investing in the capabilities necessary to continue our ability to do this in the future. Critical to our efforts in obtaining these capabilities is the support of this committee.

33. Senator SESSIONS. Admiral McGinn, are there adequate capabilities to support joint and coalition operations, as well as, operations among diverse Navy and Marine Corps units?

Admiral MCGINN. We have made tremendous strides in continuing to improve the Navy—Marine Corps ability to fully conduct joint and coalition operations with our sister Services and allied nations. Each new program that is under consideration for fielding is put under the microscope for its ability to operate in a joint environment. Considerations of full spectrum interoperability, communications networks, bandwidth, common support systems, maintenance, etc. are all considered prior to proceeding with a new acquisition program. These joint and coalition interfaces are further validated and proven through an extensive experimentation and wargaming regime—including recent Fleet Battle Experiments, U.S. Naval exercises (RIMPAC), and Global Wargames to name just a few. Our aggressive Navy/Air Force Warfighter talks vet not only programs and equipment, but more importantly tactics, techniques and procedures for joint operations.

LASM/ALAM

34. Senator SESSIONS. Admiral McGinn, what is the status of the Navy's plan to provide land attack weapons in support of joint operations?

Admiral MCGINN. Navy is developing capabilities in a two phased approach to meet Naval Surface Fire Support and Naval Surface Strike mission requirements in support of joint operations. Navy focused its near- and far-term development of these capabilities largely on Marine Corps requirements. These requirements were stipulated in a letter signed by Lieutenant General Rhodes, Commanding General, Marine Corps Combat Development Command. This letter clearly identified criteria for meeting USMC warfighting requirements. The Commandant of the Marine Corps supports Navy's plan to execute this two phased approach of near- and far-term capabilities to support Marine Corps Requirements. Navy recognizes that these capabilities are not exclusively for the use of the Marine Corps. Because of the increased firepower, responsiveness, accuracy, lethality, and power projection capability, Navy will be a significant contributor to any future conflict.

A very critical command and control system we are developing in the near-term, the Naval Fires Control System (NFCS), will be the mission planning system used for all land attack missions. As part of NFCS development, we are working with the Army to incorporate our weapon system parameters into Army's Advanced Field Artillery Tactical Data System (AFATDS). AFATDS is the battlefield command and control system that will be used by both Marine Corps and Army to seamlessly control designation and coordination of fire support targets. NFCS and AFATDS will have full digital connectivity and ability to pass target requirements between weapon platforms, regardless of service.

The Navy is developing Extended Range Guided Munition (ERGM) as the near-term gun-fired fire support weapon. ERGM is a GPS/INS-guided, rocket-assisted, 5" projectile fired from the 5"/62 Mk 45 Mod 4 gun. ERGM will achieve an objective range of 63nm with lethality, accuracy, and responsiveness commensurate with Marine Corps needs in the near-term, fiscal year 2005.

Land Attack Standard Missile (LASM), which has a range of 150nm, meets all USMC requirements in accuracy, lethality and responsiveness for 57 percent of the DD 21 NSFS target set. LASM will field in fiscal year 2004. To fully meet Marine Corps Land Attack Missile requirements for Naval Surface Fire Support (NSFS), given a finite budget, Navy plans to develop the Advanced Land Attack Missile (ALAM) capability providing required range, lethality, accuracy, and responsiveness for the full DD 21 target set. ALAM will be fielded coincident with DD 21.

Our far-term approach is to develop a more robust set of NSFS weapon systems for DD 21. These systems include Advanced Gun System (AGS) with associated Long Range Land Attack Projectile (LRLAP) (which has a range of 100nm) and Advanced Land Attack Missile (planned range of 200–300nm).

Fielding of our near-term capabilities is critical to development of the Command and Control (C²); tactics, techniques, and procedures (TTP); and Concept of Operations necessary to execute the land attack mission in a joint warfighting environ-

ment. Our capabilities emerging with our far-term strategy will benefit from the development of the C² and TTP pioneered with our near-term solution.

QUESTIONS SUBMITTED BY SENATOR BOB SMITH

35. Senator SMITH. Admiral McGinn, it is my understanding that the Navy is trying to replace its current minesweeping helicopter, the MH-53E. The primary reason that the Navy is looking for a replacement is because the MH-53E is simply too expensive to operate—some maintenance estimates run as high as 44 hours of maintenance for every hour the MH-53E is in the air. It appears, however, that the Navy has focused solely on the H-60 helicopter as the only replacement platform without considering other helicopters. I am concerned because, despite the Navy's and the manufacturer's best efforts, it appears that the H-60 will be unable to perform the required role of minesweeper no matter what modifications are made to the aircraft.

Has the Navy considered the possibility of using other existing rotary wing aircraft, besides the MH-60, to replace the MH-53E? If not, why not?

Admiral MCGINN. The Navy's Helicopter Master Plan to reduce the number of existing helicopter models from eight down to two (SH-60R and MH-60S) type-models will realize significant maintenance, training and supportability savings while providing increased capability in a variety of required warfare disciplines, including Airborne Mine Countermeasures (AMCM). The introduction of an AMCM-capable MH-60S will correct a current capability shortfall by providing the carrier battle group (CVBG) and the amphibious ready group (ARG) an organic airborne mine countermeasures (OAMCM) defense against the threat of sea-mines.

The Navy is confident that the MH-60S will meet all required OAMCM key performance parameters contained in the CNO-approved AMCM Helicopter Operational Requirements Document (ORD). This confidence is based upon the successful results of a recently completed series of AMCM mission suitability flight tests conducted on the prototype YCH-60. The AMCM suitability tests comprised three distinct phases: Phase I & II flight testing, completed between Oct. 1999–Jan. 2000, validated the structural and flight safety limits of the MH-60S helicopter to perform the AMCM tow mission. In August 2000, ASN (RDA) approved initial production of AMCM modified MH-60S helicopters based upon the positive results of the Phase I & II AMCM suitability flight testing. Final Phase III flight testing, completed in October 2000, demonstrated successful employment of the next generation AN/AQS-20 towed underwater minehunting sonar system from the YCH-60 down to operational depths and speeds required in the AN/AQS-20 ORD.

It is also important to note that only two (AN/AQS-20 and Organic Airborne Surface and Influence System (OASIS)) of the five next generation OAMCM sensors systems currently in development will be towed by the MH-60S helicopter. The remaining three OAMCM systems (Rapid Airborne Mine Clearance System (RAMICS), Airborne Laser Mine Detection System (ALMDS), and Airborne Mine Neutralization System (AMNS)) are non-tow systems that are mounted directly to the helicopter airframe. These three systems will be employed in a manner similar to current H-60 operational flight envelopes.

Finally, a determination regarding the retirement date of the MH-53E as the Navy's dedicated AMCM or heavy-lift helicopter platform has not been made. The OAMCM capability provided by the MH-60S is not a replacement for the dedicated MCM mission or dedicated mine countermeasures forces, but rather a needed expansion of an operational capability to counter an existing threat. Dedicated MCM forces, including the MH-53E, are required to support current CINC warfighting OPLANS. The Navy is currently evaluating the requirement to maintain a dedicated MH-53E based AMCM and heavy-lift capability beyond 2010.

36. Senator SMITH. Admiral McGinn, a number of military and government sources have emphasized the need for training with live ordnance. While I understand the value of "hands on" training before we send our service members in harm's way, no one has explained, in quantifiable terms, the value associated with training with and handling live ordnance.

Why is it necessary to train with live ordnance and maintain such facilities as Vieques?

Admiral MCGINN. Beyond the psychological value/realistic training quality of using live ordnance ("train as you will fight" issue), other benefits accrue in the entire weapon delivery chain, from ship weapons magazine to ordnance on target. As an example, for Naval aviation training purposes, Aviation Ordnance men are required to adhere to strict radiation emissions standards and other weapon handling

safety requirements. They must properly wire the weapon fuses and fins and precisely dial in fuse settings according to a load plan that is usually submitted in a time-constrained environment. These fuse settings are determined by the strike planner or weaponeer—occasionally an intelligence officer, usually the aircrew (pilot or other crewmember) who will drop the weapon. During the aircrew's pre-flight inspection, they must determine whether the settings relayed to the ordnance handlers via the load plan were correctly set in the weapon and fuse, and that the fuse and bomb fin wiring will allow the weapons panel switches in the aircraft to cause the desired post-delivery effect on the weapon. For the airborne training portion and actual employment, the pilot must fly very precise parameters to ensure that the bomb safely separates from the aircraft before arming, and that it has sufficient time after arming to detonate as desired (either on impact or at a pre-determined height above the ground, depending on the type of fuse, and the settings discussed above). Surface Ship and Submarine Ordnance have similar requirements that are not tested in an end-to-end manner when inert ordnance is substituted for live ordnance.

In the shipboard environment where the gun crew must deliver ordnance to a precise point in support of forces ashore, it is critical that all aspects of the fire support team be coordinated during training scenarios. The use of live-fire ranges provides the only scenario approaching real world operations that allows the complete decision chain from the marine issuing a call-for-fire to the ship firing their weapon. Currently, our fire support weapons are centered on the 5"/54 Mk 45 Mod 1&2 gun. The range of current projectiles is well within the visual horizon, where the firing ship and supported ground unit can see each other and yet the necessity to conduct live-fire training events with this system is vitally important. In the very near-term, we will field weapon systems that are capable of ranges exceeding the visual horizon. The issues surrounding the safe application of this fire support are even more complex than the systems we have now. Live-fire ranges are the only method that gives the entire firing team the opportunity to "train as we fight."

"Blue Bomb Mentality" (Inert ordnance is usually painted blue) is a condition where the entire team—weapon magazine to target area delivery—may get complacent by working exclusively with inert weapons. None of the above mentioned risk reduction/reliability improvement procedures are employed with inert bombs, for example—no hazard of bomb detonation from emissions radiation, no fuses or wires for the ordnance handlers to set, no pre-launch inspections other than to check the physical presence and security of the bomb on the aircraft/weapon in its launcher, and no detonation, regardless of how precise or imprecise the delivery profile. In the excitement and pressure of actual combat operations, failure to properly conduct these live ordnance procedures—usually due to a lack of training and familiarity with actual ordnance—has been cited in most incidents of weapons reliability/mission failures and ordnance related mishaps.

In the excitement and pressure of actual combat operations, failure to properly conduct live ordnance procedures—usually due to a lack of training and familiarity with actual ordnance—has been cited in the most incidents of weapons reliability/mission failures and ordnance related mishaps.

Combined arms, live-fire training exercises on Vieques provides the Expeditionary Battle Force a "full dress rehearsal" of all of its components functioning as one force—one team. Live-fire training enables the battle force commander to refine their tactics, techniques, and procedures (TTP). It allows them to exercise synchronization of weapons delivery with ground force movement and conduct final quality assurance checks at all levels of the battle group under conditions as near to combat as possible. The benefits of this type training are immeasurable for all members and units of the force; providing realistic training and evaluation of a successful ground maneuver supported by naval fires and close air support and the learning points that could preclude fratricide. Facilities such as Vieques provide U.S. deploying forces critical and unique opportunities to conduct full scale planning and execution of combat operations, (e.g., amphibious assaults supported by naval battle group air and surface fires in a single location). The distracters inherent in this complex combat environment can be overwhelming. Actual live-fire practice forces the weapons delivery chain to break non-live-fire training habits that are essential to successful individual/unit combat performance. (e.g., operating arming switchology for the first time, adhering to appropriate safety procedures, fighting the tendency to watch for weapon launch/light-off and detonation) while being potentially targeted by enemy weapons fire is an unrealistic expectation. Consequently, Vieques training alternatives for forward deploying forces are inferior, nonrealistic, and piecemeal.

The Vieques training range provided optimal live ordnance training prior to the agreement with the Government of Puerto Rico to use only inert ordnance. Vieques offers the most tactically realistic air-to-ground training for Navy airwings, naval

surface fire support and integrated combat training for the Navy and Marine Corps forces at the present time.

QUESTIONS SUBMITTED BY SENATOR SUSAN COLLINS

DD 21

37A. Senator COLLINS. Admiral McGinn, during the hearing, Navy and Marine Corps witnesses stated that: (1) Naval Surface Fire Support (NSFS) will be a key requirement for Naval and Marine Corps operations in the future; (2) the 155mm Advanced Gun System (AGS) would provide the sustained fire support the Marine Corps requires; and (3) DD 21 is the only platform that the AGS will be equipped/deployed on.

Given those statements, is there an immediate requirement for fielding DD 21?

Admiral MCGINN. Yes. DD 21 will be critical to the Navy's ability to satisfy U.S. Marine Corps requirements for Naval Surface Fire Support (NSFS) in support of Operational Maneuver From the Sea (OMFTS) and Ship to Objective Maneuver. Current systems lack the range, accuracy, responsiveness, and lethality to support USMC requirements.

In order to meet Marine Corps requirements for naval surface fires, the Navy is developing a more robust set of NSFS weapon systems for installation on DD 21. These weapon systems include the 155mm Advanced Gun System (AGS) and the Advanced Land Attack Missile (ALAM), which is in the concept definition phase. The 155mm gun with "fully automated" ammunition handling system and a family of munitions/propelling charges will achieve ranges of up to 100 nautical miles. AGS will provide high rate-of-fire (approximately 12 rounds per minute) with a magazine capacity sufficient in size to meet Marine Corps' NSFS requirements for Operational Maneuver From the Sea. These capabilities will allow DD 21 to deliver ordnance affordably and at substantially greater ranges inland against the enemy.

37B. Senator COLLINS. Further, what are the other valid Navy and Marine Corps requirements/missions that DD 21 is expected to fill?

Admiral MCGINN. The general mission of the DD 21 as defined in the Mission Needs Statement (MNS) is "to provide independent forward presence and operate as an integral part of joint and allied maritime expeditionary warfare operations." More specifically, the mission is to carry the war to the enemy through offensive operations: (a) by being able to launch and support precision strike weapons and to provide firepower support for amphibious and other ground forces, and (b) by protection of friendly forces from enemy attack through the establishment and maintenance of battlespace dominance against theater missile, air, surface and sub-surface threats.

The DD 21 Concept of Operations, the DD 21 Design Reference Mission, and the 2000 Surface Combatant Force Level Study (SCFLS), all require the ship to perform a number of missions as a multi-mission surface combatant focused on land attack and maritime expeditionary warfare in support of Theater and Joint Force Commanders, capable of conducting independent operations in all environments. These missions consist of an ability to contribute to the following:

- Land Attack (Precision Strike, Interdiction, Naval Surface Fire Support)
- Maritime Expeditionary Warfare (Local Area Defense, Antisubmarine Warfare (ASW))
- Forward Presence and Deterrence
- Operations Other Than War (OOTW)

Specific roles assigned to the DD 21 in the Concept of Operations, Design Reference Mission, and Surface Combatant Force Level Study include:

- Land Attack engagements;
- Air Warfare
- Antisubmarine Warfare (ASW)
- Mine Warfare (MIW) employing In-stride Mine Avoidance system
- Support of Special Operations Force (SOF) forces
- Small boat engagements
- Underway Replenishment (UNREP)
- Vertical Replenishment (VERTREP)
- Helicopter/Unmanned Aerial Vehicle (UAV) operations

38. Senator COLLINS. Admiral McGinn, although a program should not live or die based on its use of leap-ahead technologies, it is apparent by reviewing public infor-

mation made available by the DD 21 industry teams that both designs include leap-ahead technologies for the program. Can you describe for the committee what leap-ahead technologies the Navy intends to pursue in DD 21?

Admiral MCGINN. DD 21 will bring many unique capabilities to the fleet including the following:

- *Land attack warfare:* DD 21 will field the 155mm Advanced Gun System (AGS), which has the range and lethality to meet USMC/JROC requirements for gunfire support for forces ashore. The 155mm gun with a “fully automated” ammunition handling system and a family of munitions/propelling charges will achieve ranges of up to 100 nautical miles. AGS will provide high rate-of-fire (approximately 12 rounds per minute) with a magazine capacity sufficient in size to meet USMC operational requirements.
- *Integrated Power System (IPS)/Electric Drive:* DD 21 will have all-electric architecture that provides electric power to the total ship (propulsion and ship service) with an integrated plant. Benefits include reduced operating costs, improved warfighting capability, and architectural flexibility.
- *Optimized Manning through Automation:* Use of initiatives, such as advanced system automation, robotics, human-centered design methods, and changes in Navy personnel policies will allow DD 21 to meet mission requirements with a significantly reduced crew size of 95–150 sailors while improving the sailor’s quality of service.
- *Affordability:* DD 21’s streamlined acquisition approach seeks maximum design innovation and flexibility, and significant cost savings through the use of advanced commercial technologies and non-developmental items. By requiring the program to achieve a procurement cost objective of \$750 million (fiscal year 1996 dollars) for the fifth DD 21 at each shipyard, and to support an operating cost objective of \$2,700 per operating hour, the Navy has contractually established the ability to hold down cost while maximizing warfighting capability.
- *New Radar Suite* (Multi-Function Radar (MFR)/Volume Search Radar (VSR)): MFR provides DD 21 and other applicable surface combatants with affordable, high performance radar for ship self-defense. The MFR will achieve a level of force protection that greatly enhances ship defense capability against all threats envisioned in the littoral environment. VSR provides DD 21 and other applicable surface ships with an affordable, high performance air search radar. Both MFR and VSR will dramatically reduce manning and life-cycle costs associated with multiple systems that perform these functions today.
- *Survivability:* DD 21 will lead the Navy in the development of system and protection concepts that reduce vulnerability to conventional weapons and peacetime accidents under reduced manning conditions. Development areas include damage control computer-based systems that provide rapid systems restoration, fire protection devices that improve probability of survival with a reduced crew ship, and ship protection concepts that reduce magazine and commercial equipment vulnerability.
- *Stealth:* DD 21’s design will reduce the acoustic, magnetic, infrared and radar cross section signatures compared to the DDG–51 class and make the ship less susceptible to mine and cruise missile attack in the littoral environment.

NAVAL SURFACE FIRE SUPPORT

39. Senator COLLINS. Admiral McGinn and General Nyland, the Navy has in recent years turned its attention toward influence ashore in the littorals, with the intent to provide Naval Surface Fire Support for the Marine Corps and Army. The need for fire support has been articulated in a letter from General Rhodes, the Commanding General of the Marine Corps Combat Development Command, to the Chief of Naval Operations dated June 16, 1999. Additionally, a recent GAO report dated May 2001 entitled “Improved Littoral Warfighting Capabilities Needed”, states that currently we are greatly lacking in the area of fire support and have a need to meet this requirement today.

Can you confirm this need/requirement? Furthermore, can you elaborate on which weapons and programs are in the works to meet this vital defense requirement? I also ask how, and on what platforms, these weapons/capabilities will be deployed?

Further, if DD 21 is mentioned as the platform, which I suspect it will be, Admiral/General, in what ways do you see DD 21 as Naval Surface Fire Support enabler for the naval fleet of the future?

Admiral MCGINN. Yes, I do confirm this need/requirement. We realize that sea-based Naval Surface Fire Support (NSFS) will be required to support joint operations, and integrate with expeditionary forces (whether Marine, Army, or other) operating over an extended littoral battlespace. In order to meet requirements for Naval Surface Fires in support of Operational Maneuver From the Sea/Ship to Objective Maneuver, the Navy is developing a variety of weapon systems that provide the required range, lethality, accuracy, and responsiveness. Near-term initiatives include improving existing 5" guns, developing an extended range guided munition, developing a land attack missile, leveraging/integrating C4I systems to support NSFS and assessing advanced gun technology. The MK 45 Mod 4, 5"/62 caliber gun mount is a modification of the existing MK 45 Mod 2 medium caliber, 5"/54 naval gun. This modification will allow the gun to support longer range engagements. The first gun has been installed aboard U.S.S. *Winston S. Churchill* (DDG-81). She completed her A/B trials in July 2000. The gun has been installed aboard DDGs-81-86 and 88 as of May 2001. This gun system will IOC in fiscal year 2002. This gun system is funded for installation in DDGs-81-107. It will also be back fit on the CGs a, part of the cruiser conversion program and is a potential backfit to DDGs-51-80. The Extended Range Guided Munition (ERGM) deployed from the 5"/62 caliber gun system has an objective range of 63 nautical miles. Support to ground combat operations takes a significant step forward with the introduction of the ERGM with its enhanced capabilities of greater accuracy, greater coverage, and better control. The Land Attack Standard Missile (LASM), which is a modification of the Navy's SM-2 area air defense weapon, will provide responsive fire support out to 150 nautical miles. Although LASM would normally be employed to provide deep supporting fires, it can also be considered for use against high payoff or immediate threat targets in close proximity to friendly forces. LASM will be deployed from Aegis cruisers and destroyers. We are also acquiring a new generation Tactical Tomahawk cruise missile capable of attacking strategic, operational, and tactical targets.

Our long-term approach is to develop a more robust set of NSFS weapon systems for installation in DD 21. These weapon systems include the Advanced Gun System (AGS), which will fire a 155mm ERGM to an objective range of 100nm. Another system is the Advanced Land Attack Missile (ALAM) which is in the concept development phase and will have an objective range out to 300nm. These capabilities are being developed to meet all NSFS requirements for Operational Maneuver From the Sea/Ship to Objective Maneuver and will allow our combatants to remain over-the-horizon and still deliver ordnance at substantially greater ranges inland against the enemy.

DD 21 will have the capacity to carry the variety and volume of offensive, precise firepower that will enable our United States Marine Corps and light mobile United States Army forces to complete their littoral missions. These systems include the Land Attack Standard Missile (LASM), Tactical Tomahawk Cruise Missile (TACTOM), the Advanced Gun System (AGS) firing the Long Range Land Attack Projectiles (LRLAP) to distances of 100 miles, and will have the growth potential to include the Advanced Land Attack Missile (ALAM) and other emerging technologies. DD 21's ability to deploy a high volume of precision guided munitions will provide Joint Force Commanders with significantly improved ranges, accuracy, volume, firing rates and response times compared to the current generation of Naval Surface Fire Support (NSFS) systems.

General NYLAND. The Marine Corps requirements for naval surface fire support, as stated in General Rhodes' June 1999 letter, remain valid. Recognizing this, the Navy has developed a two-phased approach for meeting these requirements.

In the near-term, the Navy has several programs that are intended to provide an enhanced NSFS capability to meet immediate needs. Key programs in the near-term include the 5"/62 gun, the Naval Fires Control System, the Land Attack Standard Missile, and the Extended Range Guided Munition. While these programs will not fully meet the Marine Corps' NSFS requirements regarding weapons range and lethality, they will provide a significant improvement over the current capability.

These enhanced Land Attack Warfare capabilities will be deployed aboard two separate classes of ships. Beginning with DDG-81 (DDG-51-class destroyer), all new construction of DDGs will include the 5"/62 gun which is capable of firing the Extended Range Guided Munition. Additionally, these ships will be either back- or forward-fitted with the Naval Fires Control System and Land Attack Missile Fire Control, which will enable a direct interface with the Marine Corps' Advanced Field Artillery Tactical Data System and provide the software necessary to fire the Land Attack Standard Missile. These capabilities will also be installed aboard a number of CG-47-class ships that have been designated to receive Land Attack upgrades via the Cruiser Conversion Program.

In the far-term, the Navy plans to fully meet the Marine Corps NSFS requirements with the DD 21 *Zumwalt*-class destroyer, which will be armed with two 155mm Advanced Gun System turreted guns and the Advanced Land Attack Missile.

DD 21 will become the NSFS enabler for the naval fleet of the future in several aspects. The 155mm Advanced Gun System is being developed specifically for the DD 21, with possible application for follow-on ships such as the CG 21. With an expected total magazine capacity of 1500 Long Range Land Attack Projectiles, the DD 21 will provide a level of sustained, long-range, precision fires that will not be possible with the DDG-51 or CG-47 classes of ships. In comparison, the maximum capacities of these classes of ships in terms of extended range munitions represent 15.3 percent and 17.8 percent of the DD 21 magazine capacity. With a family of precision-guided and ballistic ammunition for the Advanced Gun System, and a family of general use and specialty warheads for the Advanced Land Attack Missile, the Navy's DD 21 will fully meet the Marine Corps range and lethality requirements for NSFS.

The DD 21 will also deploy a Multi-Function Radar that will be capable of detecting the fires of the enemy's shore-based artillery, rockets and mortars and extrapolating the position of the firing unit with a degree of accuracy that will enable the ship to conduct counter-battery fires in support of forces maneuvering both on land and at sea. This capability is critical for ensuring the freedom of maneuver of expeditionary forces.

40. Senator COLLINS. General Nyland and General Whitlow, Naval Surface Fire Support (NSFS) is key to Marine operations. General Rhodes, in his letter to the Chief of Naval Operations in June 1999, states that the Marine Corps requires all NSFS weapons systems be easily sustainable via underway replenishment. The availability of friendly ports to conduct such difficult operations as reloading VLS launchers cannot be counted upon in a highly uncertain future. Generals, if this is true, that all NSFS weapons systems will be easily sustainable via underway replenishment, will it be a requirement for DD 21?

General WHITLOW. The DD 21 Operational Requirements Document (ORD) includes a requirement for underway replenishment. DD 21's capabilities with regards to specific weapons systems will be dependent upon the winning design.

Currently, surface ships possess the capability to replenish gun systems at sea. Some existing surface combatants have the ability to replenish Standard Missile at sea. No existing surface ships are capable of replenishing Tomahawk missiles at sea.

General NYLAND. The Operational Requirements Document for DD 21 states, "DD 21 will have the capabilities and facilities which support mission execution, including: . . . replenishment at sea." The manner in which the requirement will be satisfied, and to what extent, will be contained within the proposals submitted by the competing design teams.

Currently, the process for selection of a design team has been suspended pending the completion of the on-going defense reviews. Until the down-select process resumes, and after the best-and-final-offers from the industry teams are reviewed, we will not know the manner or extent to which this requirement will be met.

P-3 AIRCRAFT

41A. Senator COLLINS. Currently the P-3 aircraft is an integral part of our current war plans, as the primary patrol, reconnaissance and surveillance aircraft. As you are aware, however, the average age of the P-3 platform is roughly 25 years old. While aircraft avionics upgrades have kept the plane relevant and viable in today's threat environment, the airframe itself is reaching the end of its useful service life. I am aware that an ongoing service life assessment program is studying the airframe fatigue life issue and that there is, currently, an ongoing Analysis of Alternatives underway to look at the Multi-mission Maritime Aircraft (MMA) as a follow-on to the P-3 program. That fact that the CINCs rely on the P-3 to perform their roles and mission on a daily basis clearly means that we need to, in the near-term, look in to the MMA program and/or actively pursue options to extend the service life of the current airframe.

Admiral McCabe, what are your thoughts on the MMA program as a follow-on contender for the Navy patrol and reconnaissance missions?

Admiral McCABE. The Navy and OSD have been analyzing alternatives for sustaining the capability the P-3 provides since July 2000. Preliminary results of that Analysis of Alternatives point to a manned aircraft (i.e., Multi-mission Maritime Aircraft (MMA)) as an essential element of the solution. The analysis also pointed

away from service life extensions (either a complete remanufacture or an interim Service Life Extension Program (SLEP)). An interim SLEP offers no improvements in operating and support (O&S) cost or availability while the remanufacture option that provides limited improvements in O&S is estimated to cost nearly as much as a new aircraft. As a result, the Secretary of the Navy targeted the 2010–2012 time-frame for MMA initial operating capability and realigned funds previously programmed for SLEP to MMA. He also emphasized the potential of leveraging off commercial derivatives for MMA. We are enthusiastic that we can address O&S cost issues while improving availability and modernizing many of the subsystems.

41B. Senator COLLINS. Admiral McGinn, do you agree that the Department needs to actively pursue and apply resources in the near-term to ensure that we can continue the P-3 reconnaissance operations without impacting readiness, as these aging aircraft reach the end of their useful service life?

Admiral MCGINN. I agree that the Department needs to pursue a variety of ways to pursue and apply resources to sustain and improve the capability P-3s provide.

In the near-term, we will inspect airframes to postpone retirements as long as possible. As P-3s reach the end of their fatigue life, the Navy plans to inspect each airframe and perform repairs. The Navy currently estimates that these Structurally Significant Inspections (SSIs) will be adequate to extend the service life 600 flight hours or 1 year, whichever occurs first. The Navy estimates that as many as six SSIs can be performed before the airframe must be retired. This will help bridge the capability gap until MMA attains IOC and any UAV solutions can be implemented.

In addition to manned aircraft, Unmanned Aerial Vehicles (UAV) like Global Hawk are being examined as candidates to perform some or all missions currently performed by P-3s. That analysis is currently planned to complete this.

LPD-17 SEALIFT CAPABILITY

42. Senator COLLINS. General Whitlow, it is my understanding that in order to provide flexible response and assured access, our military plans require the capability to rapidly deploy the equivalent of 3.0 Marine Expeditionary Brigades (MEB), which was first documented in the 1990 Department of the Navy Lift 2 Study. It is also my understanding that each year since, the Defense Planning Guidance has directed the Navy to budget for 2.5 MEB lift requirement.

This says to me that we have been budgeting for an inherent short fall for this amphibious lift capability.

What is the current lift capability and what are the operational implications of this shortfall? To what extent does the procurement and the construction of LPD-17 address the shortfall in lift?

General WHITLOW. Amphibious lift is measured using the five “lift finger prints”: Troops, Cargo, Vehicles, Aircraft, and Landing Craft Air Cushion (LCAC). The critical lift short fall in the required 3.0 Marine Expeditionary Brigade Assault Echelons (MEB AE) lift (fiscally constrained to 2.5 MEB AE) is in vehicle lift capacity. With the current 38 active and 1 Naval Reserve Force (NRF) amphibious ships, the Navy’s capability has been reduced to 2.1 MEB AE in vehicle lift. The implications of this shortfall is that the Navy has to rely on the Amphibious Lift Enhancement Program (ALEP), which is five decommissioned LKAs and four decommissioned LSTs in deep reduced operating status. If required, these ships would take a minimum of 6 months to reactivate.

Upon delivery of the 12th LPD-17 in the fiscal year 2010/11 time frame, the Navy, with 12 LHA/LHDs, 12 LPD-17 and 12 LSD-41/49 class amphibious ships will have the required capability of embarking and employing 2.5 MEB (fiscally constrained) lift for Troops and Vehicles as well as meet the 3.0 MEB requirement for Cargo, Aircraft and Landing Craft Air Cushion (LCAC). The 12 LPD-17s enable the Navy to achieve this required fiscally constrained capability without the use of the ALEP ships.

LEAP-AHEAD TECHNOLOGIES/CURRENT NAVY, FUTURE NAVY, NAVY AFTER NEXT

43. Senator COLLINS. Admiral McGinn and General Nyland, leap-ahead technologies seem to be the phrase du jour, however, everyone seems to define leap-ahead technologies differently.

First, would you define for us what a leap-ahead technology is?

Second, would you describe for the committee key initiatives and/or programs in your respective areas that would qualify as leap-ahead programs and or initiatives?

Admiral MCGINN. Leap-ahead technology is more revolutionary than evolutionary. It leap-frogs evolutionary steps and rapidly creates new capability. When implemented, the technology causes sudden changes in capability by breaking the paradigm of the old technology.

The following are a few examples of key initiatives that qualify as leap-ahead technologies:

- *Advanced Multifunctional RF Concept (AMRFC)*. When successfully demonstrated, AMRFC will provide truly multifunctional RF systems capable of conducting surveillance, targeting, communications, electronic warfare and other RF functions simultaneously from the same aperture and some of these functions in the same beam. This technology will drastically lower the RF cross section signature of our ships; greatly reduce life cycle costs due to upgrades, operators and maintenance personnel, and logistics costs; and improve the performance of our combat platforms.
- *Wide bandgap semiconductors (e.g., silicon carbide and gallium nitride)*. These semiconductors are characterized by their intrinsic ability to operate at much higher temperatures. We have already demonstrated ten times higher microwave power output than present semiconductors.
- *Ultra-dense, Ultra-fast, Non-volatile Digital Memory*. This technology exploits Giant Magnetoresistance in a very unique manner wherein it is combined with nanolithography. It is expected that the entire computer memory will reside in the same package as the CPU, but require but 4 percent of the CPU power.
- *Environmentally Adaptive Sonars*. Early demonstrations of these methods show improvement factors of three in sonar system performance for legacy sonar systems using only new software approaches. Combining these new approaches with new sonars and other environmental inputs can yield another improvement factor of three to four in performance under many circumstances, particularly in shallow water for bottomed targets.
- *Hypersonic Weapons*. At an average speed of Mach 6, a hypersonic weapon will travel 500 miles in less than 10 minutes. A treaty compliant weapon launched from the sea (ship or submarine) could carry packages for surveillance and targeting as well as sub-munitions to address time critical targets. Alternatively, its kinetic energy could be used against hardened buried targets at long range in a heavily defended environment.
- *Multi-mission Directed Energy Weapon*. A directed energy weapon sends an intense electromagnetic beam at a target. At low powers these devices can be used for force protection and anti-personnel, at higher powers for electronic warfare, at still higher powers they can destroy sensors and radomes, and at very high powers structural damage will be induced for missile defense. In the long-term, the free electron laser will be capable of providing the wavelength diversity and the high power to perform missions across this spectrum.
- *Advanced Materials*. Ultralight materials with periodic open-celled architectures offer revolutionary solutions to a variety of naval problems. Multifunctional in nature, these open-celled materials provide structural capability with only minimum weight, they can include IR signal suppression, embedded antennas and sensors, blast protection, integral rechargeable batteries, etc.

General NYLAND. Leap-ahead or transformational technologies are linked to scientific and technologic capabilities. Truly transformational technologies result from new scientific and technological breakthroughs that allow us to perform in radically different ways. A technology is only transformational if it is either completely new, or an exponential increase in current technologic capability. Marginal increases in technology do not necessarily result in transformation, they represent modernization. Modernization is the result of evolutionary changes in technology, while transformation results from revolutionary changes.

Examples of transformation programs intended to achieve fundamental advances in capabilities by exploiting leap-ahead technologies are tilt-rotor technology as represented by the V-22 Osprey, the Advanced Amphibious Assault Vehicle, the Joint Strike Fighter, Naval Precision Fires, and Integrated Logistics Capabilities. Most of our programs are modernization programs that represent more modest efforts to yield incremental improvements to our equipment systems such as the KC-130J, Lightweight 155mm Howitzer, High Mobility Artillery Rocket System, Medium Tactical Vehicle Replacement, and amphibious shipping. There are two reasons for this; first, transformational programs are inherently expensive, second, the Marine Corps knows who we are, and where we are going, we do not see a need to radically transform ourselves. We do have a need to modernize our material.

Looking ahead, the programs we have planned will, with your support, begin to converge in our operating forces in 2008. In the not distant future, the Advanced Amphibious Assault Vehicle, V-22 Osprey, Joint Strike Fighter, KC-130J, Lightweight 155, High Mobility Artillery Rocket System, Medium Tactical Vehicle Replacement, Naval Surface Fire Support, amphibious shipping, and a number of other smaller programs will together dramatically transform our expeditionary capabilities. These systems promise to embody speed, stealth, precision, and sustainment as well as afford us modern agility, mobility, and lethality. But, we cannot stop here. We must work together with the Navy and our defense industrial base to exploit other opportunities to advance our capabilities in the future.

44. Senator COLLINS. Admiral McGinn, conceptually the Navy has recently focused on the concepts of the current Navy, the next Navy, and the Navy after next. While these concepts are intriguing, what efforts or concepts by technology or warfighting activity can you describe to the committee as the progression for each of these Navies?

Admiral MCGINN. We are pursuing the following technologies to deliver to the current, next, and after next Naval Forces:

Current Naval Forces

Virtual At Sea Training. The future of the Atlantic Fleet naval surface fire support live training range is uncertain. Consequently, alternative methods must be developed to train and qualify gunfire teams, conduct close air support training and qualification, and test and evaluate emerging gun/missile systems. We recently demonstrated that several of these fleet requirements could be met by a portable system that integrates virtual battlespace technologies with techniques for spotting the fall of shot with acoustics. A mid-July demonstration showed that gunfire could be scored by hydrophone arrays and effectively controlled by a Marine Corps spotter using a virtual target. An advanced, fleet ready version is planned for deployment by Spring 2003.

Tactical Atmospheric Modeling Simulation/Real Time (TAMS/RT). TAMS/RT is a portable weather forecast system that provides timely and flexible data assimilation support. The biggest impact of TAMS/RT is expected to be in the areas of enhanced mission planning for Tomahawk and chemical/biological defense planning where meteorological effects are crucial to mission success.

Littoral Remote Sensing. This capability uses overhead sensing assets to collect data which are then compared to models to locate land mines and obstacles; identify bathymetry, topography, beach defenses, beach trafficability, and potential mine danger areas; and possibly find broaching water mines.

Interactive multi-sensor analysis trainer (IMAT). Under the IMAT program scientific visualization techniques have been applied to sonar training, yielding dramatic improvements in performance levels. Research on team training methods has yielded large improvements in tactical decision-making performance for Aegis anti-air warfare teams, and this training has been widely implemented in the fleet.

Distributed Collaborative Planning Environment. The research goal is to be able to collaborate across any set of users and any set of computing environments for the purpose of making faster and better decisions.

Nano-scale Coatings for Wear Resistance. New capabilities to create homogeneous nanometer scale structure in coatings will significantly reduce total ownership cost of naval machinery/components. These nano-scale coatings provide durability of the wear surface without the increased brittleness that normally accompanies improved wear resistance. Currently they're being developed and used in reduction gear, antenna doors, bow plane actuators, and eventually will be on every machinery/component than can be coated.

Next Naval Forces

Rapid Airborne Mine Clearance System (RAMICS). RAMICS will provide a joint force commander with an organic, in-stride capability to rapidly target and destroy near-surface mines with minimum risk to personnel and equipment.

Multistatic Active ASW. The Multistatic ASW technology includes the development of coherent offboard sources for use by the surface ship, submarine, air, and surveillance communities together with multistatic processing and predictive algorithms that will be robust in littoral areas.

Mine Countermeasure Autonomous Underwater Vehicles (AUVs). Advanced technology AUVs will enable the tactical commander to clandestinely reconnoiter and neutralize mines in littoral areas without having to expose divers or mammals.

Environmentally-derived Electrical Energy. Genetically engineered and laboratory-evolved microbes and enzymes will revolutionize electrical energy harvesting from

the environment, as well as the synthesis of critical materials, affording novel capabilities.

Broad Spectrum Stochastic Sensors for Chemicals and Biologicals. This revolutionary technology utilizes a single genetically engineered biomolecule (channel or protein receptor) as a detector element. The output is a digitized bar code that classifies and quantifies, at the maximum theoretical speed, all chemicals (metal ions, anions, organics, chemical agents) and biologicals (proteins, viruses and biological agents, including future threat agents) encountered in civilian and military indoor/outdoor environments and on the battlefield. This technology will provide a new generation of sensors for enhanced battlespace awareness, force protection, and supporting autonomous operation missions such as maritime reconnaissance and under-sea search and survey.

Training R&D. Human Systems research will bring together virtual reality and artificially intelligent coaching to provide trainers for surface ship handling as well as Marine expeditionary vehicles, including the AAV (advanced amphibious assault vehicle), LCAC (landing craft air cushioned) and the V-22 Osprey. Computer-based training will be providing distributed training via the web anytime and anywhere it is needed.

After Next Naval Forces

Electromagnetic Launch and Recovery of Aircraft. Replacing steam catapults with electric machinery will enable launch and recovery of all types of conventional take-off aircraft of all sizes. This system will significantly modify/reduce the dynamic loading of the aircraft during the acceleration and deceleration cycles, and significantly reduce the volume, weight, and maintenance associated with current aircraft launch and recovery systems.

All Electric Warship (Reconfigurable). All electric warships provide not only benefits in operating fuel efficiencies, but also enable new capabilities such as speed-of-light weapons and ship reconfiguration. Ship level synergy of smart sensor and intelligent component technologies will produce a significant improvement in ship survivability, thus enhancing the fight-through capability of naval warfighting platforms.

Full Automation of Computer Generated Forces. New theories of human cognition and perception are currently being extended to create computerized entities that behave realistically and are cognitively competent, unpredictable and challenging. This advance will provide the Navy and Marine Corps with a first-time capability for realistic anytime, anywhere, on-demand simulation-based training, and will enable a 90 percent reduction in simulation manning requirements.

DNA Vaccines. DNA vaccine technology has the potential to revolutionize the development and fielding of vaccines against a wide range of operationally relevant diseases and biological warfare threats. They can be rapidly and easily designed, produced and tested, are inexpensive to manufacture, and will not require refrigeration. The first DNA vaccine against malaria has been proved effective in initial clinical trials.

MARINE CORPS—V-22/LCAC

45. Senator COLLINS. General Nyland, I understand that the V-22 aircraft, at present, is not fitted with a defensive gun system. Could you tell us whether funds have been appropriated for this purpose, and would you elaborate on what plans have been made to date for the development of a defensive gun system? In your response, please also address the overall cost impact of retrofitting the platform with a defense gun system.

Could you also explain to the committee what the current lift helicopters, CH-46 and the CH-53, use as a defense gun system?

General NYLAND. Yes, funds have been appropriated for a defensive weapon. The V-22 Defensive Weapon System was opened for bid offers during mid-fiscal year 2000. General Dynamics Armament System's GAU-19, a three-barrel .50 caliber Gatling gun, was selected as the core weapon. The core weapon makes up a portion of the overall defensive weapon system. The system was bid and proposed as a electronically targeted and fired weapon with full integration into the V-22 cockpit. This integration included full interface with the Forward Looking Infrared Radar, the pilot's Night Vision Devices (goggles), and the pilot's helmet cueing system. The original proposal was rejected due to the dramatically higher-than-expected or projected integration costs for new installation and retrofit.

At this time, HQMC, USAF/SOCOM and fleet users are reviewing alternative Defensive Weapon Systems. A defensive weapon capability will be selected and incor-

porated on the aircraft once current reviews of alternatives are complete. The reviews will include overall cost of both installation and retrofitting each system.

The CH-46 and CH-53 use the GAU-15/A (XM-218) 50 caliber machine gun. The XM-218 is a World War II era, crew-served, recoil-operated, belt-fed, air-cooled, percussion-fired weapon, with a rate of fire of 750 rounds per minute. The gun system consists of the GAU-15/A 50 cal. machine gun, a pintle mount assembly, brass collection bag, and ammunition can bracket assembly. The pintle mount assembly is attached at personnel or cargo doors or windows of the aircraft. The ammunition can bracket holds a single 100 round can of linked 50 cal. percussion primed ammunition. A disintegrating metallic link-belt is used to feed the ammunition into the weapon. Additional cans of ammunition are carried inside the aircraft to allow for rapid reloading. The XM-218 is a man-on-gun weapon designed to provide medium-range defensive and suppressive fires and has no precision engagement capabilities.

46. Senator COLLINS. General Nyland, you mention in your testimony that the Landing Craft, Air Cushion (LCAC) Service Life Extension Program (SLEP) will ensure that LCACs continue to provide over-the-horizon logistical support long past their current 15 to 20 year service life, and that the LCAC is a vital leg of your tactical mobility triad with the MV-22 Osprey and the Advanced Amphibious Assault Vehicle (AAAV). Could you, or one of the other witnesses, let us know if you plan to keep the LCAC as part of your triad, and if so, is that program already written into out-years to ensure that it will remain a part of your triad?

General NYLAND. The LCAC will continue to be a vital leg of our mobility triad providing high-speed, over-the-horizon surface assault ship-to-shore movements of troops and equipment. The LCAC delivers the bulk of the rolling stock and combat equipment needed to generate the rapid build-up of combat power ashore. The speed, range and beach access afforded by the LCAC make it a key asset in executing maneuver warfare from the sea. The LCAC SLEP program will extend the hull life of the craft by at least 20 years and install a state of the art Command, Control, Communication, Computer and Navigation (C4N) suite. LCAC SLEP will fulfill Marine Corps lift requirements and ensure its viability into the future.

SMART SHIP/OPTIMIZED MANNING INITIATIVES

47. Senator COLLINS. Admiral Kelly, the April 30 *Defense Daily* had a lengthy article on the Navy's future plans for so-called Smart Ship technologies. One statement that troubled me in that article noted that: "As of now, there is little funding available to support the installation of Smart Ship aboard the Navy's *Arleigh Burke*-class (DDG-51) destroyers. Some destroyers will receive elements of the Smart Ship Systems but not the entire suite."

I know there have been significant issues involved in the Smart Ship program, but I also realize the importance of bringing appropriate technology to bear that can increase automation, response time, warfighting capability, and allow smaller crews to safely and effectively operate these front-line combatants. I fully support that objective. Please comment on the budget and implementation plans for bringing such technologies to the DDG class, and for doing so in a fully integrated, not a stove-piped manner, so as to ensure that the desired capability gains are achieved and crew sizes can be safely and confidently reduced. I would hate to see us invest in these technologies and not be able to reap the reduced manning and supportability benefits that should go along with these investments.

Admiral KELLY. Our recent success in operationally deploying Smart Ship advanced capabilities on CG-47 Aegis Cruisers has provided the groundwork for applying similar capabilities on the DDG-51 *Arleigh Burke*-class. Current funding (PB01) allows the procurement of one DDG-51 ship set in fiscal year 2002 for the Land Based Engineering Site (LBES) and one ship set in fiscal year 2004. The LBES unit will be fielded with the Flight IIA DDG baseline to examine the engineering of the Smart Ship suite, and support risk reduction and interoperability initiatives. The Navy has already initiated the fielding of the Smart Ship elements in new construction. Current planning will permit DDG-90 to have the full Smart Ship Phase 1 capability baseline. Phase 1 introduces all the capabilities with their functionalities on board, but not a completely integrated system. These stand-alone capabilities will support reduced workload initiatives and reduced manning but not to the full extent as will Phase 2. Phase 2 will be to develop an open architecture that includes the multi-function workstation capability as currently configured on the CG-47 Smart Ships. A Navy/Industry Joint Product Team has been working together to explore how rapidly and safely, the Navy can insert Cruiser Smart Ship like architecture to the *Arleigh Burke*-class.

SURFACE WARFARE RESOURCES

48. Senator COLLINS. Admiral McGinn, in Lieutenant General Nyland's testimony, he stated that the Marine Corps requires an increase of approximately \$1.8 to \$2.0 billion per year sustained for the next 8 to 10 years in order to meet tomorrow's challenges and to maintain the "expeditionary force in readiness" our Nation requires.

Could you tell us what funding the Navy requires in its programs to achieve this level of readiness for its naval forces? I realize of course, that as Lieutenant General Nyland points out, any estimated shortfall you cite today may change as a result of Secretary Rumsfeld's Strategic Review.

Admiral MCGINN. The CNO has stated our fiscal year 2002 shortfalls of approximately \$12.4 billion that accounts for forces and their support and readiness requirements. Reviewing this across the FYDP (fiscal year 2002–2007) without specific knowledge of possible changes dictated from the Secretary of Defense's Strategic Review, that amount could reach approximately \$60–\$61 billion based on current estimated budgets.

[Whereupon, at 3:58 p.m., the subcommittee adjourned.]

**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2002**

TUESDAY, JULY 31, 2001

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

NAVY SHIPBUILDING PROGRAMS

The subcommittee met, pursuant to notice, at 2:35 p.m. in room SR-222, Russell Senate Office Building, Senator Edward M. Kennedy (chairman of the subcommittee) presiding.

Committee members present: Senators Kennedy, Reed, Sessions, and Collins.

Majority staff member present: Creighton Greene, professional staff member.

Minority staff members present: Gary M. Hall, professional staff member and Thomas L. MacKenzie, professional staff member.

Staff assistants present: Thomas C. Moore and Jennifer L. Naccari.

Committee members' assistants present: Menda S. Fife, assistant to Senator Kennedy; Elizabeth King, assistant to Senator Reed; Ryan Carey, assistant to Senator Smith; and Kristine Fauser, assistant to Senator Collins.

**OPENING STATEMENT OF SENATOR EDWARD M. KENNEDY,
CHAIRMAN**

Senator KENNEDY. We will come to order. Senator Sessions is expected here momentarily. I know he always likes to listen to my pearls of wisdom, but I think on this occasion we will move ahead with the hearing. We are voting at 3:00 and have other votes that will interrupt the work of the subcommittee, so we will get started.

The subcommittee meets this afternoon to discuss the Navy shipbuilding programs to meet the future operational requirements of the Navy and the Marine Corps. We will hear from two witnesses: John Young, Assistant Secretary of the Navy for Research, Development, and Acquisition; and Adm. William Fallon, Vice Chief of Naval Operations.

This is Secretary Young's first appearance before the subcommittee. He is certainly no stranger to many of us. I commend him for his years of distinguished service on the Senate Defense Appropria-

tions Subcommittee, and it is a privilege to welcome him here before the subcommittee today.

We also welcome Admiral Fallon, who has testified effectively before this subcommittee in the past. It is good to have him back again.

The focus of today's hearing is on modernization of the Navy's fleet. It is essential to understand the relationship of the shipbuilding program to the Navy's plans for force structure and readiness. Today's investments in Navy modernization will help determine tomorrow's readiness. Without adequate readiness in the future, we could have forces without adequate capabilities to carry out their mission.

The Secretary of Defense is currently conducting a broad strategy review on the needs of national security in the years ahead. We look forward to receiving his recommendations. Clearly, we must continue to have strong naval forces to protect our interests overseas. Changes will be needed, but it is essential to ensure that we do not lose the very real advantages that our Navy and Marine Corps so skillfully provide.

We will discuss a number of issues and programs with our witnesses today and consider the attack submarine programs and force levels, including the option of converting the Trident ballistic missile submarines to submarines that carry cruise missiles. We will consider aircraft carrier modernization, including the Navy's evolutionary development of new capabilities and technologies to increase future strength and reduce demands on our personnel. We will consider surface combatants, including the DDG-51, Aegis destroyers, and the delay in awarding the contract for the winning team to develop the next generation of combatants, DD 21 land attack destroyer.

We will consider the amphibious ships, including the delays and cost increase in the LPD-17 amphibious transport dock program, and the budget request to continue incremental funding for the LHD-8 amphibious assault ship. These are all important issues. I look forward to the testimony of our witnesses and to working with them to achieve the great goals that we share.

It is always a pleasure to work with Senator Sessions on these issues, and we will hear from him in just a moment. I recognize Senator Collins at this time.

STATEMENT OF SENATOR SUSAN COLLINS

Senator COLLINS. Thank you very much, Mr. Chairman. I have a statement that I would like to submit for the record and I would like to make a few comments.

I am very concerned that in recent years the U.S. Navy has shrunk from a fleet of 594 ships back in 1987 to approximately 315 ships today. During this same period, ship deployments have increased by more than 300 percent. Navy officials have repeatedly warned that the fleet is stretched perilously thin, and needs to be increased to at least 360 ships to meet present mission requirements.

At the present rate of investment, our Navy will continue to shrink. The current shipbuilding rate of six ships per year has not dipped this low since 1932. If we do nothing to alter this rate, our

fleet will atrophy significantly by 2010 and shrink to fewer than 200 ships by 2030.

With the fleet totalling just half of the size of the ideal, it is easy to see why the Navy's ability to achieve its mission, a mission vital to our Nation's defense and security, would be severely hindered. I look forward to working with the chairman, the ranking member, and other members of this subcommittee to ensure that we do provide a fleet of the size necessary to meet our current mission requirements.

Thank you, Mr. Chairman.

[The statement of Senator Collins follows:]

PREPARED STATEMENT BY SENATOR SUSAN COLLINS

Thank you Mr. Chairman. Seapower is among the most essential components of our national security posture and an important part of ensuring the U.S. meets our global commitments. For more than two centuries, our naval forces have provided immediate access, combat power, and are presently moving toward truly network-centric operations, which will use information technology to link together Navy ships, aircraft, and shore installations improving U.S. naval capabilities. These capabilities and the fact that two-thirds of the world's surface is covered by ocean make a compelling case for robust naval forces.

In recent years, however, the U.S. Navy has shrunk from a fleet of 594 ships in 1987, to approximately 315 ships today. During this same period, ship deployments have increased more than 300 percent. Navy officials have repeatedly warned that the fleet is stretched perilously thin and needs to be increased to at least 360 ships to meet its present mission requirements.

These factors, coupled with the changing threats to America's national security, demand that we recapitalize our Navy. President Bush and his administration have identified such a transformation as one of its major defense policy goals. As we in Congress work with the Bush administration to reshape our military, I will continue to encourage the replenishment of our naval fleet as the cornerstone of this transformation. Here's why:

At the present rate of investment, our Navy will continue to shrink. The current shipbuilding rate of six ships per year has not dipped this low since 1933. If we do nothing to alter this rate, our fleet will atrophy significantly by 2010 and shrink to fewer than 200 ships by 2030.

With a fleet totaling just half the size of the ideal, it's easy to see why the Navy's ability to achieve its mission—a mission vital to our Nation's defense and security—would be severely hindered. Our naval forces allow us an edge in conflict and in extending humanitarian assistance because of the Navy's ability to freely transit anywhere around the globe. We cannot afford to concede this edge.

As I have stated before, numbers do matter. The number of ships under construction 10 years ago was 110, while only 37 ships are under construction today—this is a 66 percent decline in ship construction. Furthermore, while the number of ships authorized to be built 10 years ago was 15, today the budget request before us authorizes a mere six ships for the third consecutive year. In recent years, we have been consistently underfunding the naval shipbuilding and research and development accounts; the future force is at risk.

I am convinced there will be a need for even greater reliance on our naval forces as joint operations emerge as a primary focus of future operations. For these reasons, and many others, I share the Navy's view that we must recapitalize our fleet to ensure that America retains her maritime power in the 21st century. As we recapitalize our fleet, we must make prudent, long-term investments by supplying our fleet with the most technologically advanced capabilities available. The DD 21 stealth destroyer, the DDG-51 Aegis Destroyer, and the LPD-17 amphibious ship all represent exciting technological leaps in capability and innovation that will help America's Navy remain strong throughout the 21st century. One of our most immediate challenges, however, is to lay out a plan to bridge the gap between the current production of the DDG-51 Aegis class destroyers and the next generation destroyer, DD 21.

The Zumwalt class land attack destroyer, or DD 21, will be optimized for joint operations, and will be vital to assure and sustain access to areas of U.S. interests overseas. It will do so very efficiently, with a target crew size of 95 and other design innovations that result in significant life-cycle cost reductions over the current de-

stroyer program. The U.S. security strategy to defeat adversaries that seek to deny us access to littoral regions of the world will be critically dependent on U.S. ships that are harder to target and attack, and on weapons systems that can deliver combat power from a distance.

The Navy will gain other important capabilities when LPD-17 sets sail in the name of the United States. This class of ship will replace with a 12-ship class, capabilities that 41 of the Navy's existing amphibious fleet are currently providing, moving them well into the 21st century.

Although Secretary Rumsfeld has not yet completed his strategic, quadrennial defense review, and other reviews of the Armed Forces, and we are therefore uncertain of the conclusions he may reach, we are certain of the clear and immediate need to recapitalize our military with the latest technology so that we can continue to keep the peace and promote prosperity.

The challenges before us are great. We need to be more innovative in our methods of procurement, to meet the needs of our sailors, marines, and soldiers in the 21st century. We need to actively pursue multiyear procurement, advance appropriations, block buys based on economic order quantities, and strategic partnering among the industry and the government in the future.

I look forward to working with each of you in the weeks and months ahead to bring the procurement rate to an adequate number that will meet the needs of our Nation's security and provide more stability for our critical but increasingly fragile naval shipbuilding industrial base. I welcome any thoughts or comments you would care to offer the subcommittee on these complex issues. Thank you, Mr. Chairman.

Senator KENNEDY. Senator Reed.

Senator REED. Mr. Chairman, I would like to associate myself with the remarks of the Senator from Maine. I think she has adequately described a very serious situation for the Navy shipbuilding program, one that we are responsible for in terms of reviewing the proposals to ensure that we do as much as we can to increase the production and provide the Navy with the ships they need, not only to defend America, but to safeguard the sailors at sea.

Thank you.

Senator KENNEDY. Very good. I will just take a moment to mention the areas I am going to question you on so that when it is my turn, you might have thought a little bit about them. There may be some ways in your own presentation that you might mention these, and perhaps others can do that as well until Senator Sessions gets here, because I think we would like to make sure that he has the opportunity to listen to the witnesses.

Secretary Young, I am going to talk about the budget request that includes the \$800 million in the shipbuilding budget for completion of the prior years shipbuilding. Secretary England has been quoted as saying he believes strong measures need to be taken to avoid a situation where the bulk of some future years shipbuilding budget is taken up paying for ships that were approved in earlier budgets.

This is a generic kind of a problem. We know that there are probably three or four different ways of payout that we have seen over different times, and we are going to be interested in hearing the way that you look at that issue.

On countermine warfare, Admiral Fallon, I remember the difficulties the Navy and the Marine Corps encountered with the shallow water mines during the Gulf War. Much in the area of mine countermeasures has been accomplished since then, yet much remains to be done.

I firmly believe mines continue to present a serious threat to our Navy and Marine forces. Senator Cohen and I worked very closely

together in terms of developing with the Department additional focus, attention, and responsibility on mine warfare.

I can remember seeing, when I visited the gulf, the helicopters carrying these chain fences up and down the gulf in order to sweep the mines through there. I think it is fair to say that there is a dramatic difference between the blue water challenges that we were facing vis-a-vis the Soviet Union and the challenges we face with the littoral states in terms of the shallow waters that we are going to be facing in different kinds of situations around the world. I am going to ask you about the reprogramming of the SABRE shallow water mine system.

There is enormous interest, as well, about the delay in the DD 21 program for reasons other than the obvious one of potentially delaying an important capability. A number of the technologies need to be matured if the Navy is going to support the award of the DD 21 ship construction contract in fiscal year 2005.

In addition, some of the other shipbuilding programs are counting on technologies that were to be developed as part of the DD 21 effort following the down-select. In this category would be the volume search radar that is supposed to be part of the CVN-77 combat system, so we are going to be interested in getting an update on that issue.

We have also heard on this committee about missile defense issues and the use of the Navy in terms of some of the missile defense systems. The administration's draft plans for expanded inter-continental ballistic missile defense included looking at sea-based defenses. The Navy seems split over the matter, with some advocating a greater Navy role in missile defenses other than the Navy area defense, the theater-wide defense programs, and others. We are concerned about the impact this would have on the number of new ships.

There has been concern expressed here by our Members about the number of ships and what this would mean. What are you thinking? What are your thoughts about those issues particularly with regard to the Pacific?

Secretary Young, it is clear that the LPD-17 program has experienced serious problems in completing the design work necessary to keep the production program on schedule. I suppose such problems are understandable when the Navy and the contractor are tackling such an effort. However, we are concerned that there may be some process problems.

It took a long time for the Navy to inform the subcommittee about these difficulties even after these difficulties had been reported in the press. The result is that we are in a situation where we are being told, "we have this problem, we are fixing it, and we don't have much time." We certainly do not have much time to look at what could have been done or should have been done, or where the responsibility lies to try and address it. By letting us know late, it obviously affects our ability in similar situations to become involved and hopefully be able to have a constructive resolution.

I am sure Senator Reed is going to have questions about conversion issues as well.

At this point I would like to submit Senator Smith's statement for the record.

PREPARED STATEMENT BY SENATOR BOB SMITH

The Bush administration in April announced its annual arms sales to Taiwan, and agreed to provide three diesel submarines, a reversal of earlier U.S. policy under the Clinton administration.

I just want to say for the record that I am strongly supportive of this sale—it supports a major ally and major trading partner in the Pacific—it supports our Asian defense posture, and it helps to deter the threat of conflict between China and Taiwan by bolstering Taiwanese defenses.

Most important, while we are in the 8th year of building less ships than we need to be building to keep the current 310 ship force—and in a resource-constrained environment—we ought to be looking at ways of keeping our shipbuilding base warm. Providing diesel subs to Taiwan could help to accomplish that objective. I want to encourage you to deliver on this commitment to the Taiwanese and to offer my assistance in helping you do so.

I think we will go ahead, since it is now 2:45, and hear from our witnesses. Admiral Fallon, we will hear from you first.

**STATEMENT OF ADM. WILLIAM J. FALLON, USN, VICE CHIEF
OF NAVAL OPERATIONS**

Admiral FALLON. Thank you. Mr. Chairman, distinguished members of the subcommittee, I appreciate the opportunity to appear before you today to discuss the Department of the Navy's fiscal year 2002 ship programs budget. Just by way of update as we sit here this afternoon, we have 101 ships of the fleet that are at sea and around the world, forward-deployed, carrying out the numerous missions that we ask them to do.

The *Constellation* Battle Group is in the Arabian Gulf, along with the *Boxer* ARG and the Eleventh MEU *Enterprise* Battle Group is also in the CENTCOM theater. *Kearsage* and her marines are in the Mediterranean. The cycle of rotational forces continues. The *Vinson* Battle Group is just leaving the west coast a couple of days ago, and the *Theodore Roosevelt* Battle Group is in their final training off the east coast now with her associated MEU to do their final preps for their upcoming deployment. These units are forward-deployed, and about to be deployed. They are very well-trained and, we believe, very capable of any missions they may be tasked with overseas.

On the other hand, today, as I am sure you are acutely aware, our 317-ship Navy is much-diminished from their size just a decade ago. This represents the smallest Navy since 1933, 40-some percent fewer than just a decade ago. Our procurement accounts are insufficient to sustain even the 1997 QDR force structure requirements, and so we need, by our estimates, 8 to 10 ships a year just to sustain the levels we have now.

Instead, we are building a little over six on average, and so we are clearly on a down slope that is going to end up, without some course correction here, somewhere down in the 200s. You can pick the end point on the glide slope, and I think we are putting our future at serious risk.

We need about \$34 billion a year in acquisition, we believe, given the conditions today, to sustain the force that we have now. That is about \$11 or \$12 billion in the shipbuilding account just to maintain the QDR levels. Clearly, the funding is inadequate. We are frustrated, as I am sure you are, at the levels, the small numbers of ships under construction, the unused capacity in the shipyards,

and the resulting higher unit cost for the Navy. So what are we doing about it?

Our fiscal strategy is to fix the most serious problems in the 2002 budget, and to that end the CNO and the Department of Defense have recently realigned over \$7 billion over the FYDP from other Navy programs in what we would call current readiness. We think this is absolutely and critically important, because if we do not give our people today, the men and women serving, the tools they need to carry out their missions, the adequate training, and the resources to be ready today, we put them at risk. We clearly think that is our highest priority. We have diverted a lot of money in the program to ship maintenance, real property maintenance, and ship operations, to assure the people we have today are as well-trained, prepared, and equipped as we can do.

Our strategy then would be to implement a longer-term vision, beginning with the 2002 budget after the current round of QDR studies and associated panels have concluded their work, which we think will be very soon, and then move on. However, an awful lot of work remains to be done in the near-term for us to really fix the size and shape of the future Navy. I regret that I cannot lay out the entire blueprint here of "A to Z," but at least I can give you an idea of where I think we are headed.

I can report that we are, in fact, transforming to meet the challenges of the new century. A decade ago we had a blue water Navy second to none. Today we face challenges that are different from a decade ago, and we are working to invest in those technologies, conducting experimentation in certain technologies, and acquiring new capabilities, along with streamlining our organization in an ongoing effort to increase our war-fighting agility and effectiveness.

This Navy transformation is not a recent trend, but it is something that has been ongoing for over a decade. Our Navy, we believe, has been successful in transforming itself from a blue water focus to one that is capable of operating in the littorals. We continue to embrace transformation with things like electric drive, innovative manning techniques, and an emphasis on sensors and networks. Transformation notwithstanding, numbers do matter, and we are concerned with the reality that most of our capability today, in fact, resides in our ships and aircraft.

The dilemma we face for 2002 and beyond, is that we will be unable to maintain the force structure we have now in terms of size. We must have increased procurement, and at some point it has to come from some place other than near term readiness. We have had pretty much a one-way flow for the last couple of years. We need to get that reversed so that we can start investing and recapitalizing for the future. I solicit your help in giving us the appropriate tools and fiscal resources to get into a procurement rate that can sustain the force levels that we need both today and tomorrow.

Thank you very much for your help for our sailors and marines. I have a statement that we have jointly submitted for the record. I stand ready to answer your questions. Thank you very much.

[The joint statement of Mr. Young and Admiral Fallon follows:]

JOINT PREPARED STATEMENT OF JOHN J. YOUNG, JR. AND ADM. WILLIAM J. FALLON,
USN

Mr. Chairman, distinguished members of the subcommittee, thank you for this opportunity to appear before you to discuss the Department of the Navy's fiscal year 2002 ship programs budget.

The United States has always been a maritime nation, and our mastery of the seas, sustained by forward-deployed U.S. naval forces, ensures our access to our economic, political, and security interests overseas. Our economic prosperity, now more than ever before, is inextricably tied to a global economy that is totally reliant upon maritime trade to sustain its growth. The oceans are therefore the "great commons" of this economy: with public access to all, and so used by all. The United States Navy and Marine Corps ultimately guarantee this freedom.

Our mastery of the seas, made possible by the deployed presence of a substantial U.S. military force, continues to ensure access to our economic, political, and security interests overseas. Today there are approximately 48,000 sailors and marines deployed on carrier battle groups, amphibious ready groups, and independent deployers such as submarines and maritime patrol aircraft. These "on station" naval forces promote regional stability, deter aggression, and provide the capability for timely response in crises.

If deterrence fails and crisis becomes war, naval forces provide significant combat power. Immediately employable naval forces, simultaneously controlling the seas while projecting power throughout the battlespace, are critical to assuring access for forces arriving from outside the theater, and enabling the transformation to a lighter, more expeditionary joint force. As the ground-based forces join naval forces already operating forward, the result has to be a joint force that projects offensive power sufficient to serve our national interests. The Navy provides credible combat-ready forces that can sail anywhere, anytime, as powerful manifestations of American sovereignty.

Command of the seas, provided by U.S. sovereign power deployed forward, provides a tangible demonstration of our commitment to shared interests, and underwrites our political alliances and friendships across the globe. It is important to say that we will be there when needed to maintain the freedom of these shared global commons, deal effectively with shared problems and to respond quickly to acts of aggression . . . but, it means even more to be there beforehand.

Finally, the success of future joint combat operations will require us to have immediate and sustained military access wherever and whenever it is needed. Command of the seas—which are fully two-thirds of the world's surface—provide that global access, which is a priceless strategic advantage for our nation.

We are building upon our tradition of expeditionary operations as we transform into "network-centric" and "knowledge-superior" services. Knowledge superiority is the achievement of a real-time, shared understanding of the battlespace by warriors at all levels of command. This will, in turn, facilitate our ability to remain forward by providing the means for timely and informed decisions inside any adversary's sensor and engagement timelines.

To support this strategy and our forces, the President's fiscal year 2002 budget request increases the amount of research, development, and overall procurement investment critical to maintaining our Navy and Marine Corps team as the pre-eminent combat force in the world. We seek an agile, flexible force, which can counter both the known and the unforeseeable threats to our national security.

Before discussing our shipbuilding programs, one issue needs to be highlighted: the Navy's execution issue of our shipbuilding programs currently under contract, known as prior year completion.

COMPLETION OF PRIOR YEAR SHIPBUILDING CONTRACTS

The funding required to complete construction of ships currently under contract has increased significantly. Shipbuilding and conversion, Navy (SCN) funding is already insufficient to finance current force structure requirements and prior year completion "bills" exacerbate the issue. Cost growth on ship construction contracts erodes the confidence of Congress in our estimating and budgeting process for future procurements.

Many factors have contributed to the cost growth of current ships under contract, including:

- Low rate procurement of vendor material and Government furnished equipment,
- Configuration changes,
- Budget reductions/rescissions,
- Unanticipated challenges with the design and production of lead ships,

- Unanticipated growth in shipyard labor rates, and
- Inflation and fiscal constraints.

All of these factors, but particularly fiscal constraints, cause the Department to budget procurement programs tightly. The consequences of these factors are that any cost growth or budget reduction causes immediate execution issues. During times of robust ship construction, the Ship Cost Adjustment (SCA) process would allow the Navy and Congress to finance programs, which were experiencing difficulty with those that were performing well. However, the number of new construction ships budgeted each year has decreased from an average of about 20 per year in the 1980s to about 8 per year in the 1990s. In fiscal year 2000–2002, the number of new starts has remained stable at only 6 ships per year.

To prevent further increases to the prior year completion funding shortfall, the Navy is pursuing the following corrective actions:

- Remedy the systemic issues within our control and incentivize industry partners to do the same.
- Ensure that estimating and budgetary processes better reflect cost risk of factors beyond our control.

The Navy's amended fiscal year 2002 President's budget requests \$800 million to address the near-term issue. This prior year budget request only addresses funding required to execute the prior year programs during fiscal year 2002. The program execution consequences of receiving funding below the request are very serious and are not in the nation's interest.

SHIPBUILDING PROGRAMS

Our fiscal year 2002 budget request calls for construction of 6 ships in fiscal year 2002: three DDG–51 destroyers; one *Virginia*-class submarine; one Auxiliary Cargo and Ammunition Ship (T–AKE); and an incrementally funded LHD–8. In addition, we have provided funding for advance procurement of the fifth and sixth *Virginia*-class submarines, funded advance procurement for the next four ships of the U.S.S. *San Antonio* (LPD–17)-class, funded service life extension for two Landing Craft Air Cushion (LCAC) craft, and provided funding for two *Los Angeles*-class submarine engineering refueling overhauls which will also receive modernization to enhance combat capability. We have also funded the design start and advance procurement effort to convert two *Ohio*-class submarines to SSGNs. These submarines provide transformational warfighting capability carrying up to 154 Tomahawk cruise missiles, support sustained deployed special operating forces, and sustain our submarine force structure.

Arleigh Burke (DDG–51) Class Destroyer

The DDG–51 guided missile destroyer program remains the Navy's largest surface ship program. The fiscal year 2002 budget request includes \$2.97 billion for the procurement of three DDG–51 destroyers, which represents one additional DDG over last years budget. The additional DDG–51 will be awarded as a fiscal year 2001 option as part of the first fiscal year 1998–2001 multiyear procurement contract. Exercising this option will provide the most affordable DDG–51 destroyer of all the remaining ships in the class procurement. The balance ships are the first funded ships of a new multiyear contract scheduled to be awarded by the end of calendar year 2001. Advanced procurement funding provided by Congress in fiscal year 2001 for Economic Order Quantity buys is being obligated in order to further leverage the stability brought to the shipbuilding industrial base and increase the savings afforded through the multiyear contracting strategy.

The three *Arleigh Burke*-class destroyers procured in fiscal year 2002 will be Flight IIA ships configured with the Baseline 7 Phase I Aegis Combat System, which we introduced on the third ship in fiscal year 1998. This baseline incorporates new integrated mission capability and makes these ships more capable in the littoral than any other combatant in the world. The upgrades include the SPY–1D(V) radar system, Area Theater Ballistic Missile Defense, Cooperative Engagement Capability, the 5"/62 gun, and a Remote Mine Hunting System capability. Additionally, the DDG–51 destroyers of the fiscal year 2002 multiyear procurement will be forward fit with Baseline 7 of the Mk 41 Vertical Launching System, the Tactical Tomahawk Weapons Control System, and the ability to accommodate the SH–60R helicopter variant.

Carrier Construction

The ninth ship of the *Nimitz*-class, *Ronald Reagan* (CVN–76), was christened on March 4, 2001, and launched on March 10, 2001. Ship delivery is planned for March 2003 at Newport News Shipbuilding.

The detailed design and construction contract, including procurement of the integrated warfare system for CVN-77, was awarded to Newport News Shipbuilding on January 26, 2001. CVN-77, the tenth and final ship of the *Nimitz* Class, has a contract delivery date of March 31, 2008, to replace the U.S.S. *Kitty Hawk* (CV 63). CVN-77 remains the future carriers' transition ship to CVNX. Primary improvements include a new integrated warfare system incorporating multi-function and volume search radars supported by the next generation ship self-defense system. Additionally, an open system information architecture will provide improved C4ISR performance. These systems will be the backbone of a highly capable warfare system suite that will also be forward fit to CVNX 1 and CVNX 2. Propulsion plant improvements include centralized electric plant controls and integrated propulsion plant controls. The fiscal year 2002 budget request includes RDT&E, N funding of \$36 million to continue the development of the integrated warfare system, incorporating critical transition technologies into CVN-77. Technology demonstration for this effort will be conducted in the new Virginia Advanced Shipbuilding and Carrier Integration Center at Newport News Shipbuilding to prove new technologies before installation in the ship.

Virginia (SSN 774)-Class Attack Submarines

Construction on the *Virginia*, *Texas*, and *Hawaii* is well underway. The fiscal year 2002 budget request includes \$2.3 billion for the fourth ship and advance procurement for the fifth and sixth ships of the *Virginia*-class. The fourth ship is part of the unique single contract and construction-teaming plan approved by Congress in 1998. This provides a cost effective steady production rate that helps both shipbuilders achieve level manning and more economic material buys. The Navy is currently planning for the next "block buy" of *Virginia*-class submarines. Various contract strategies, including multiyear procurement and block buy with Economic Order Quantity material purchases are being considered. The *Virginia* program continues to incorporate warfare improvements as a result of past and on-going R&D investments. The fiscal year 2002 submarine incorporates Advanced Processor Builds for the combat system, which will improve warfighting performance and reliability.

A revised *Virginia*-class program-funding shortfall was identified earlier this year. The shortfall is the result of lean ship production and was fully realized as the shipbuilders took delivery on much of the ship equipment and material as well as resolved labor disputes. The prices of these items were much higher than defense system procurements inflation rate indices. Other significant factors to the shortfall include design performance, Government furnished equipment cost growth and engineering support. The program was no longer able to withstand the fiscal pressures and reductions arising since the program was priced in 1997.

The prior year request for fiscal year 2002 covers the immediate needs on the first three submarines. The shortfall on the fourth hull recognized earlier this year has been fully addressed in the fiscal year 2002 budget.

Seawolf (SSN-21)-Class Attack Submarines

The *Seawolf*-class submarine program has delivered the first two ships. Substantial progress has been made on the design and construction modification to the third and final *Seawolf*-class submarine.

U.S.S. *Seawolf* (SSN-21) is now conducting her initial deployment. U.S.S. *Connecticut* (SSN-22) completed successfully arctic operational testing. U.S.S. *Connecticut* is now making preparations for a Tomahawk launch test later this year.

Pre-Commissioning Unit *Jimmy Carter* (SSN-23) is being modified with additional volume to accommodate advanced technology for Naval Special Warfare, tactical surveillance, and mine warfare operations. As part of the December 1999 contract modification, the base ship contract was converted to a Firm Fixed Price contract and is on track for delivery in June 2004.

Strategic Sealift Program

The strategic sealift program is providing 19 large, medium-speed, self-sustaining, roll-on/roll-off ships. These ships provide for strategic sealift of Army unit equipment and supplies from the U.S. mainland for pre-positioning in the vicinity of potential objective areas throughout the world. Four ships have or will be delivered ahead of contract schedule by the end of fiscal year 2001; USNS *Mendonca*, USNS *Pililaau*, USNS *Watkins*, and USNS *Pomeroy*. Avondale and National Steel & Shipbuilding Company are delivering high quality ships, which is a tribute to our industry partners on the sealift program.

San Antonio (LPD-17) Amphibious Transport Dock Ship

The *San Antonio*-class of amphibious transport dock ships represent the Navy and Marine Corps future in amphibious warfare, and is one of the cornerstones in the Department's strategic plan known as "Forward . . . from the Sea." The 12 ships of the *San Antonio*-class will functionally replace four existing classes of amphibious ships. This plan will not only modernize our amphibious forces, but will also result in significant manpower and life cycle cost savings.

The fiscal year 2002 budget request includes \$421 million for advanced procurement efforts for the next four ships of this 12-ship program. This funding will stabilize the vendor base and support planning and material procurement to commence construction of the next two ships in fiscal year 2003, resulting in construction of these ships on a fiscal year 2002 schedule. Providing full funding for two LPD-17 ships in fiscal year 2002 will not further accelerate the schedule for LPD-21 and LPD-22, since the procurement of material required for construction is already funded. Lead ship construction commenced last summer at Avondale. LPD-19 construction commenced this month at Bath Iron Works. Subsequent to the fiscal year 2001 budget review, both the Navy and industry conducted independent assessments of the design progress necessary to support production of the lead ship. These reviews identified a projected additional 14-month adjustment (for a total of 24 months) to the lead ship, resulting in delivery of the LPD-17 in November 2004. We attribute the delay primarily to completion of detail design and translation of that design into detailed production instructions. The design process is proving more difficult and time-consuming than originally estimated; however, this new computer-aided design process is yielding a much higher quality product. Production schedules for LPD-18 and follow ships have been adjusted to reflect the delay to the lead ship and to ensure efficient follow ship construction at the respective shipyards.

One of the goals of the LPD-17 program is to achieve a 20 percent cost avoidance in the operating and support costs for this 12-ship class. This goal will be achieved through the application of Integrated Process and Product Development Teams and development of advanced product modeling in the Integrated Product Data Environment. Current estimates of operating and support cost avoidance exceed \$4 billion on the 40-year life cycle of the 12 ship class to date with more initiatives expected before completion of the program.

Auxiliary Cargo and Ammunition Ship (T-AKE)

The Navy has several supply ships that have been in service for over 30 years. Many of them are steam propulsion system ships whose service lives will expire in fiscal year 2007. We plan to replace these aging Ammunition and Dry Stores Ships (T-AEs and T-AFs) with the T-AKE Auxiliary Cargo and Ammunition Ships. The fiscal year 2002 budget request includes \$371 million in SCN funding for the third ship of this 12-ship class.

The Navy awarded Phase I contracts to four shipbuilders in August 1999 for cargo-system integration studies for the efficient handling of material within the ship. Contract award for Phase II, detail design and lead ship construction, is imminent as industry is submitting their "best-and-final" offers for final evaluation. Lead ship delivery is scheduled in fiscal year 2005.

LHD-8 Amphibious Assault ship

LHD-8 is a gas turbine powered amphibious assault ship based on the successful *wasp* (LHD-1)-class. The gas turbine propulsion with all electric auxiliary systems being included in LHD-8 will result in an estimated total ownership cost savings of \$350 million to \$420 million for this ship over its 40-year estimated service life. The Navy awarded a contract to Litton Ingalls for detail design of the propulsion plant in July 2000. Procurement of long lead material and advance construction of components as authorized by Congress was awarded in May 2001. A construction contract award is planned for December 2001. LHD-8 construction will begin in fiscal year 2002, accounting for one of the six new construction ships in the President's budget submission. As approved by Congress, the fiscal year 2002 request includes incremental funding of \$267 million for LHD-8. When coupled with the previous appropriations, the fiscal year 2002 request provides 61 percent of the total LHD-8 full funding requirement of \$1.82 billion.

Future Ship Construction

During the last decade, the focus of maritime warfare operations has necessarily shifted from open ocean, blue-water, sea-superiority roles to execution and support of operations in the littorals. Projecting U.S. maritime power from the sea to influence events ashore directly and decisively is the essence of the Navy and Marine Corps team's contribution to national security.

In support of this shift in focus, construction of the *San Antonio*-class amphibious transport dock ships and the *Virginia*-class attack submarines, both of which were designed for the post-Cold War era, is well underway. Additionally, we are in the midst of designing two more platforms, the DD 21 destroyer and the next generation aircraft carrier, CVNX. DD 21 will be a multi-mission surface combatant tailored for land attack and maritime dominance while the new CVNX-class carrier will use an evolutionary process for inserting new technologies to enhance war-fighting capability.

DD 21 Destroyer

The fiscal year 2002 budget request includes \$643 million to continue development of the 21st century land attack destroyer. DD 21 will provide offensive, distributed, and precise firepower at long ranges in support of forces ashore. Entering the fleet as our frigates and *Spruance* (DD-963)-class ships retire, DD 21 will sustain required surface combatant force levels.

The Navy has successfully engineered a competitive acquisition strategy for DD 21 that effectively employs industry's broad resources, expertise, and ingenuity to achieve the requirements of tomorrow's fleet. DD 21's acquisition approach seeks maximum design innovation and flexibility, minimum cycle time from ship design to delivery, and significant cost savings using advanced commercial technologies and non-developmental items. Advanced design and construction techniques, and an innovative maintenance and support concept will result in reductions in procurement and lifecycle operating and support costs, including significant manning reductions along with improved quality of life for the crew.

DD 21 and her associated technologies represent the future of the surface Navy and DD 21 represents the type of change that the greater Navy needs to be an affordable and potent force. DD 21 technologies include advanced weaponry to meet 21st century warfighting requirements but also includes the automation needed to fight and survive with reduced manning, the essential key to reducing lifecycle costs for all Navy ships. Examples of these warfighting and affordability technologies include:

- 155mm Advanced Gun System (AGS), which has the range and lethality to meet USMC/JROC requirements for gunfire support for forces ashore.
- Integrated Power System (IPS)/Electric Drive: DD 21 will have all-electric architecture that provides electric power to the total ship (propulsion and ship service). Benefits include reduced operating costs, improved warfighting capability, and architectural flexibility.
- Optimized Manning Through Automation: initiatives, such as advanced system automation, robotics, human centered design methods, and changes in Navy personnel policies allow reduced crew size of 95-150 sailors while improving quality of life.
- New Radar Suite (Multi-Function Radar (MFR)/Volume Search Radar (VSR)): the radar suite provides DD 21, and other applicable surface combatants, with affordable, high performance radar for ship self-defense against envisioned threats in the littoral environment while reducing manning and life-cycle costs compared to multiple systems that perform these functions today.
- Survivability: protection concepts that reduce vulnerability to conventional weapons and peacetime accidents under reduced manning conditions are key technologies required for the ship design.
- Stealth: acoustic, magnetic, infrared and radar cross section signatures are markedly reduced compared to the DDG-51 destroyers and make the ship less susceptible to mine and cruise missile attack in the littoral environment.

The President's fiscal year 2002 budget request sustains the commitment to the DD 21 program and the power projection mission that it represents. The competition, which will determine the contractor responsible for the completion of DD 21 system concept design and the detailed design and construction of the first four DD 21 land attack destroyers, is in source selection. The Navy has temporarily held the completion of source selection in abeyance. The decision was made to allow time for the Department of the Navy to determine if a change in program strategy was warranted based upon the outcome of the ongoing defense reviews.

The Navy remains committed to the objectives and technologies associated with DD 21 and is working closely with the Department of Defense to expedite results from the defense reviews so that source selection may proceed. Until those results are known and the lead ship contract award can proceed, work on key DD 21 technology development continues under our existing contracts with industry. Fiscal

year 2002 R&D funding is critical for the work on key DD 21 systems technology to proceed without impact to the overall program schedule.

CVNX

On June 15, 2000, the Under Secretary of Defense (Acquisition, Technology, and Logistics) granted Milestone I approval for the Navy to proceed with the CVNX program as recommended. The CVNX program will use an evolutionary, multi-ship process for inserting new technologies that will enhance warfighting, and enable critical features for future flexibility.

CVNX 1 is the next step in the evolution of improved aircraft carriers following CVN-77. Specifically, CVNX 1 will build upon the CVN-77 design, incorporating an improved nuclear propulsion plant, an expanded-capacity and modern electrical generation and distribution system, and an electromagnetic aircraft launch system (EMALS). EMALS is designed to replace the current labor-intensive and much less flexible steam catapult system on carriers today. The new propulsion plant and electric generation and distribution systems will provide immediate warfighting enhancements, improve survivability, produce significant cost and manpower savings, increase quality of life, and provide the critical enabler for future technology insertions. In addition, the new electrical systems will provide needed increased electrical capacity to further improve sortie generation, further reduce total ownership costs, and make possible improvements such as EMALS.

The next step in the evolutionary process will be to focus, in CVNX 2, on further improvements in flight deck performance, survivability enhancements, service life allowance, and continued reduction in total ownership costs.

Following Milestone I, the Navy awarded Newport News Shipbuilding the first increment of CVNX 1 design development work. The fiscal year 2002 President's budget request provides funding required to support future CVNX construction in fiscal year 2006.

JCC (X) Joint Command and Control Ship

JCC (X) will be the first new afloat command and control capability in over 30 years. It will be built around a robust, advanced C⁴ISR mission system that can be tailored to meet specific mission requirements and can rapidly and affordably incorporate new technology necessary to meet the demands of sustained operations at sea. The program entered Concept Exploration and Definition in November 1999. An Analysis of Alternatives (AoA) completed in July 2001. The Navy is evaluating the best course of action based on the analysis presented. The Navy plans to replace the four existing command ships with JCC (X) platforms beginning in the 2011 timeframe.

SHIP MODERNIZATION AND TECHNOLOGY INSERTION

While building new platforms for the future is a prime priority, maintaining and modernizing our current platforms enables them to continue to be valuable warfighting assets in the years ahead while concurrently trying to mitigate escalating support costs of aging equipment. As technological cycle times are now shorter than platform service life, it is fiscally prudent and operationally imperative to modernize the force through timely upgrades and technology insertion. In support of this priority, we plan to modernize the *Ticonderoga* Class cruisers, conduct planned maintenance and refueling of our *Nimitz* Class aircraft carriers and extend the service life of our air cushion landing craft. Our technology insertion efforts include the Smartship initiatives and a spectrum of new capabilities for both existing and in-development submarines.

Ticonderoga (CG-47) Cruiser Conversion Plan

We plan to add new mission capabilities and extend the combat system service life of the CG-47 cruisers. The fiscal year 2002 budget request includes \$177 million in all procurement accounts to continue the engineering efforts and procure systems for the first installation, which will occur in fiscal year 2005. The upgrade of these ships will add new, and enhance existing combat system capabilities for Theater Ballistic Missile Defense, Land Attack, Cooperative Engagement Capability, and Area Air Defense Commander missions. These new mission capabilities will dramatically improve the ability of these warships to operate in joint and coalition warfare environments. The program is essential to maintaining a mission-relevant force of approximately 116 surface combatants over the next 20 years.

Carrier Maintenance and Modernization

The Navy provides the maintenance and upgrade of our *Nimitz*-class carriers through the Incremental Maintenance Plan (IMP). The IMP includes the mid-life

Refueling Complex Overhaul (RCOH) industrial availability. The RCOH is necessary to achieve the full 50-year service life potential of the *Nimitz*-class. The RCOH provides the repairs and modernization necessary for reliable ship operations. It also refuels the reactors, supports the *Nimitz*-class IMP, and implements Total Ownership Cost reduction initiatives.

The U.S.S. *Nimitz* (CVN-68) RCOH began in May 1998 and delivery was delivered in June 2001. The ship will transit to the west coast in Fall 2001 with a Post Shakedown Availability scheduled for January 2002.

U.S.S. *Dwight D. Eisenhower* (CVN-69) RCOH began in May 2001 and delivery is expected in April 2004. Our fiscal year 2002 budget request of \$1,118 million completes the *Eisenhower* RCOH execution funding profile.

U.S.S. *Carl Vinson* (CVN-70) is in the first year of the 4-year advanced planning and procurement RCOH phase. Our fiscal year 2002 request of \$74 million is in support of its fiscal year 2005 RCOH. This investment is vital to the recapitalization of these national assets.

Landing Craft Air Cushion (LCAC) Service Life Extension Program (SLEP)

LCAC SLEP continues in fiscal year 2002 through the award of the first production contract. LCAC 91, the production-representative SLEP craft, was delivered to the Navy in December 2000. LCAC SLEP combines major structural improvements with command, control, communications, computer, and navigation upgrades, while adding 10 years to the service life, extending it to 30 years. In fiscal year 2002, LCAC SLEP is funded at \$41 million and will extend the service life of two craft. The SLEP is planned for 74 craft.

Smartship

Our budget request includes \$35 million to fund the procurement of Smartship upgrades for CG-47 cruisers in fiscal year 2002. Smartship technology consists of automation upgrades to the ship's navigation, machinery controls, and damage control systems and provides an information management network and a condition based maintenance tool for machinery. By eliminating mundane tasks through automation and allowing the crew to concentrate on high priority items, this technology is an enabler for reduced manning. Three Smartship installations are complete and feedback from the fleet is unequivocally enthusiastic: Smartship is meeting expectations to reduce the workload on our sailors. One additional Smartship installation is currently underway in fiscal year 2001. However, the Navy has restructured the future Smartship installation plan due to the settlement of a dispute with the Smartship installation contractor. The Navy plans to continue Smartship installations in fiscal year 2002 but at a reduced rate due to higher than anticipated cost. The budget includes funding for one *Ticonderoga*-class cruiser installation and procurement of Land Based Testing Equipment for future Smartship installations on the early flights of DDG-51 destroyers. Our budget request for the DDG-51 shipbuilding program continues the forward fit installation of Smartship technologies in the remaining ships of the class.

Smart Carrier

The Smart Carrier project is a similar initiative to reduce shipboard workload on our carriers through industry standard process reengineering and the insertion of enabling technologies. Like the Smartship program, the goal is to enhance the sailors' quality of life and lower TOC. Installation of demonstration technologies and implementation of business process reengineering has recently completed U.S.S. *John C. Stennis* with promising results to date. Smart Carrier funding of \$41.4 million in fiscal year 2002 includes the first full Smart Carrier installation, along with advanced planning and procurement for additional technology insertion.

Ship Technology Research and Development

The Navy's science and technology efforts are focused on future naval capabilities (FNC), which address many aspects of future shipbuilding. In the areas of sensors, weapons, communications, and radar, the Navy continues to make progress transitioning methods and equipment that allow leap ahead technologies to better fight our ships while protecting our sailors and marines. The Navy is also pursuing many human systems technologies to make the man machine interface more efficient in order to reduce manning on future ships. To better address the network centric aspects of future warfighting, the Navy has combined two FNC to bring hardware and software communities together in a more integrated approach. The most important leap ahead technology for the future of naval warfare will be Electric Warship. The Navy is standing up a new FNC to address all aspects of Electric Warship to include the propulsion, sensors, auxiliaries and weapons.

The Navy's science and technology program is focused on 12 future naval capabilities:

1. Autonomous Operations
2. Capable Manpower
3. Electric Ships and Combat Vehicles
4. Knowledge Superiority and Assurance
5. Littoral ASW
6. Littoral Combat and Power Projection
7. Missile Defense
8. Organic MCM
9. Platform Protection
10. Time Critical Strike
11. Total Ownership Cost Reduction
12. Warfighter Protection

The largest near-term beneficiaries of the Navy's science and technology program are the DD 21 and CVNX programs. Science and technology investments in electric drive and integrated electric architecture provide the basis for similar "electric ship" technology insertions in future ship programs. Other examples of technology insertions that will benefit future warships include alternative hull forms for high-speed combatants and incorporation of integrated and federated apertures for improved C⁴I and signatures performance. The benefits for the 21st century sailor range from improved automation to improved quality of life. The benefits for the 21st century Navy are improved life-cycle costs to improved combat performance.

Submarine Technology

The Navy continues to pursue a strategy of increasing the capabilities of the *Virginia*-class submarine force through the insertion of advanced technology into new construction and follow-on ships. The fiscal year 2002 budget request includes \$111 million in research, development, test, and evaluation (RDT&E) funding for advanced submarine technology development emphasizing capability improvements in sonar and major electrical/mechanical systems. Additionally, the Navy is pursuing research and development in other areas of submarine technology that address a spectrum of new capabilities for existing submarines, planned construction, and future submarine classes. The 8th *Virginia*-class submarine (fiscal year 2006) will receive a new advanced composite sail, which will provide space and volume for payloads and sensors. Separate efforts are advancing both payloads and sensors under development by two industry consortia for bringing revolutionary new capabilities to the submarine force for battleforce access, sharing knowledge, projecting stealthy power from the littoral. As these technologies mature and prove value for submarine enhancement they will be added to *Virginia*-class submarines.

Both submarine shipbuilders (Electric Boat and Newport News Shipbuilding) are playing important roles by assisting the Department's efforts to identify additional technologies for insertion opportunities and by identifying design changes that bring a life-cycle cost avoidance benefit. Last year the shipbuilders submitted 22 design improvements for consideration of which 18 were approved for further development and evaluation. Thirty-nine new technologies are being developed by the submarine community to provide these new capabilities. Additional details of the design improvement will be provided in the fiscal year 2001 Design Improvement Report.

Two industry consortia, representing over 50 industry partners, are currently working under a Navy (formerly DARPA) agreement to pursue specific areas of future advanced submarine research and development. These efforts are a result of the 1998 Defense Science Board study recommending revolutionary capability advances to the submarine force by harnessing future technologies. Beginning later in fiscal year 2001 these consortia will begin working on actual prototype demonstrations of selected technological concepts in an effort to mature the most promising advances for insertion into the submarine force. Fiscal year 2002 should see a continuation and expansion of these demonstrations to further develop technologies needed to provide additional capabilities to the submarine fleet by 2020.

National Shipbuilding Research Program Advanced Shipbuilding Enterprise (NSRP ASE) (formerly MARITECH ASE)

The Navy's National Shipbuilding Research Program Advanced Shipbuilding Enterprise (NSRP ASE) builds on previous efforts initiated under DARPA's MARITECH program (1993–1998). MARITECH was aimed at improving the design and construction processes of U.S. shipyards. Productivity improvements achieved under MARITECH have helped stimulate commercial business opportunities such as construction of crude carriers, cruise ships, and trailer ships at three U.S. shipyards. NSRP ASE is an innovative approach in public/private cooperation to jointly

fund research and development for technologies critical to the Navy's ability to reduce shipbuilding, ship repair, and Total Ownership Costs.

Submarine Force Structure

The fiscal year 2002 budget requests \$116 million to start design and advance procurement of material for fiscal year 2004 induction of two *Ohio*-class submarines, U.S.S. *Michigan* (SSBN-727) and U.S.S. *Georgia* (SSBN-729), for conversion to guided missile submarines (SSGNs). Of the total research and development and SCN budget request, \$106 million provides design and procurement of long lead time components for the SSGN and the remaining \$10 million SCN request provides advance procurement for material for the refueling overhaul. When refueled, these ballistic missile submarines will provide an additional 21 to 23 years of service each. When converted to guided missile submarines (SSGNs), these submarines will fulfill Tomahawk land attack missile and Special Operations Forces requirements currently being met by attack submarines.

The fiscal year 2002 budget plans for inactivation of two other *Ohio*-class ballistic missile submarines (SSBNs), U.S.S. *Ohio* (SSBN-726) and U.S.S. *Florida* (SSBN-728), in fiscal year 2003.

The fiscal year 2002 budget request also provides funding for refueling two *Los Angeles*-class submarines. The submarines slated for refueling are the San Diego-based U.S.S. *Houston* (SSN-713), scheduled for refueling at Puget Sound Naval Shipyard, and the Pearl Harbor-based U.S.S. *Buffalo* (SSN-715) scheduled for refueling at Pearl Harbor Naval Shipyard. Submarine Engineered Refueling Overhauls (ERO) are major depot level availabilities for *Los Angeles*- and *Ohio*-class submarines accomplished coincident with the mid-point of submarine life. During the ERO, the nuclear reactor is refueled and major ship systems and components are refurbished or replaced to enable continued unrestricted submarine operations. In addition to maintenance, ship alterations are accomplished to ensure the safe and reliable operation of the reactor plant, replace obsolete equipment, accomplish safety modifications, install environmental modifications mandated by law and to modernize the ship to meet mission requirements. Naval shipyards conduct the EROs in a nominal 24-month availability.

The Navy is continuing to evaluate how to best apply submarine force structure funds either to support additional SSN refueling overhauls or SSBN conversion to SSGN.

Naval Surface Fire Support

We are executing a two-phase plan to develop new weapons systems, advanced munitions, and a Naval Fires Control System to provide improved Naval Surface Fire Support capability. These new developments will provide long range, time critical, accurate and lethal fires in support of ground forces in amphibious and littoral operations through a combination of advanced guns, precision gun ammunition, and precision land attack missiles.

In the first phase, the Navy developed a 5-inch, 62 caliber gun and is currently developing the associated Extended Range Guided Munitions to engage targets between 41 and 63 nautical miles. These weapons, the Naval Fires Control System and a mission planning and execution tool to control their use will be installed on 28 *Arleigh Burke* (DDG-51)-class destroyers to be delivered between fiscal years 2001 and 2009, and on 22 *Ticonderoga*-class cruisers selected for modernization between fiscal years 2005 and 2011. The Navy is also developing a land attack variant of the Standard Surface to Air Missile. This Land Attack Standard Missile (LASM) program will extend the service life of aging SM-2 Block II/III missiles and convert them for use in the land attack mission. LASM will carry a MK 125 blast fragmenting, unitary warhead with 76 pounds of high explosives to ranges of up to 150 nautical miles. However, these weapons are not intended, or expected, to satisfy the full range of Marine Corps Naval Surface Fire Support requirements.

The second phase, to be completed by 2020, is intended to fully meet Marine Corps requirements. It includes developing a longer range, higher volume, larger caliber Advanced Gun System (AGS) and associated increased lethality munitions, and a longer range, increased lethality Advanced Land Attack Missile for the DD 21 Land Attack Destroyer. The Advanced Gun System and associated magazine will be fully automated and be able to deliver 12 precision guided munitions per minute to ranges up to 100 nautical miles. With the delivery of 32 DD 21s and their associated AGS mounts between fiscal years 2010 and 2020, the Navy will meet the Marine Corps fire support requirements.

Shipbuilding Industrial Base

The Navy, in conjunction with the Maritime Administration, defines the primary industrial base for naval shipbuilding as those U.S. shipyards capable of designing

and building large, oceangoing ships over 400 feet in length with a draft of 12 feet or greater. As we began expanding the fleet in 1981, there were 22 shipyards actively constructing large commercial and Navy ships. Shortly after the elimination of the Maritime Administration's construction subsidies for commercial ships in the early 1980s, commercial shipbuilding in U.S. yards virtually collapsed and a declining shipbuilding industry became more dependent on Navy construction.

Since 1990, the Navy's active fleet and the active Navy shipbuilding infrastructure have seen considerable downsizing: from 550 ships to 316 ships today and from 14 shipyards to six shipyards. During the 1980s, the Navy was ordering an average of about 20 ships per year. That average fell to about eight ships per year during the 1990s when the end of the Cold War drew down our force levels and budgets to the levels dictated. As a result of overcapacity, the industry went through several restructuring phases during which these key six major shipyards were consolidated into three corporations. We view these mergers as positive steps toward right-sizing the shipbuilding industrial base.

Assuming no further infrastructure changes, we expect these shipyards to retain their design and construction capabilities for producing the submarines, surface combatants, amphibious, and auxiliary ships in the Navy shipbuilding plan. However, we are concerned with the dwindling engineering industrial base and the resultant impact on new Navy designs, such as CVNX and DD 21. While industry has collaborated on programs such as the *Virginia*-class submarine and the *San Antonio*-class amphibious transport dock ship, we must pursue collaboration even more vigorously to minimize any impacts on the engineering workforce.

From a facility perspective, all of the six major private shipyards are operating at a fraction of capacity. However, capacity utilization levels will need to increase at most yards to achieve future year procurement rates projected in the 30-Year Shipbuilding Plan Report to Congress submitted in June 2000.

The 30-Year Shipbuilding Plan Report to Congress provided the required shipbuilding procurement rate and ship mix to sustain the present fleet size. The fiscal year 2002 budget request provides for construction of six ships. While acknowledging that this is the third consecutive year that the Navy's budget falls short of the procurement rate required to sustain the present force size, the Navy's plan also provides advance procurement funding for the next two *Virginia*-class submarines, the next four LPD-17s and design start and advance procurement for two SSGNs.

Procurement rates of 8–10 ships per year are needed to sustain the current fleet size over the long term. Continuing to procure six ships per year as reflected in the fiscal year 2002 budget will have three negative effects. First, it will create a "bow wave" of future-shipbuilding procurement requirements, for which it will be increasingly difficult to allocate scarce procurement account resources. Second, it will create additional stress on fleet maintenance budgets to sustain the service lives of aging and increasingly obsolescent ships to maintain force structure. Third, the lower shipbuilding rates of this year's budget and the increased shipbuilding rates in future years will create a layoff-hiring cycle within the shipbuilding industry, which will result in increased cost to the Government for future ship construction. This will exacerbate the previously mentioned procurement and maintenance affordability problem and causes further stress to the "top line" of future Navy budgets.

Our shipbuilding plan is barely adequate to sustain the remaining naval shipbuilding industrial base including the suppliers that provide supporting equipment and associated engineering services. Our plan provides the best available balance between the Department's requirements and available resources. The innovative teaming strategy approved by Congress for the construction of four *Virginia*-class submarines, advance procurement for the fiscal year 2002 and fiscal year 2003 *Virginia*-class submarines, and the next DDG-51 multiyear procurement contract, all highlight acquisition strategies aimed at lowering costs, reducing disruptions from hiring and layoff cycles, while level loading employment, and encouraging capital investments. Our shipbuilding plan maintains the LPD-17 program and the Auxiliary Cargo and Ammunition Ship (T-AKE) program that will help the auxiliary vessel manufacturers capitalize on past and current program efficiencies. These actions constitute the Navy's near-term effort to ensure the long-term ability of the shipbuilding industry to support our future construction programs.

The fiscal year 2002 budget request reflects our continued commitment in research and development to achieve the performance and affordability requirements of the DD 21. The DD 21 acquisition strategy focuses the developmental efforts in the two competing shipbuilder's engineering staffs, sustaining the workload for that vital component of the industrial base. The forecast for the production component of the destroyer industrial base is not as encouraging.

As noted in the November 2000 Report to Congress updating the 1993 *Arleigh Burke* Destroyer Industrial Base Study, both of the destroyer shipbuilders will have

to book unprecedented amounts of additional, non-U.S. Navy work in order to maintain their workforces during the transition from DDG-51 to DD 21 production. The report assessment was based on the shipbuilding profile represented in the fiscal year 2001 budget submission. However, the cumulative effect of actions taken in the fiscal year 2002 budget request including the acceleration of the 58th DDG-51 destroyer to fiscal year 2002, coupled with congressional action on the LPD-17 program in fiscal year 2001 and the Navy's action in the President's budget for fiscal year 2002, make the industrial base forecast even more challenging than that reflected in the report. The acceleration of the 58th DDG-51 to fiscal year 2002 sustains the surface combatant industrial base in the near term but exacerbates the industrial base situation, documented by the Report, between the end of DDG-51 production and beginning of DD 21 production. This situation demands the Navy's attention as we complete the rest of our future year shipbuilding plan. The risks of the destroyer production transition are not confined to the shipbuilding industrial base. Second tier suppliers of shipboard equipment used on destroyers and other warships will also be affected to varying degrees. These effects could range from higher unit costs for associated equipment for other Navy shipbuilding programs to a corporate decision to scale back or stop production. Neither of these consequences is in the best interest of the Navy nor the country. In view of the events that have transpired since the submission of the November 2000 Report to Congress updating the 1993 *Arleigh Burke* Destroyer Industrial Base Study, the Navy will provide a brief update of the report to the four Defense Committees, which analyzes the effect of the fiscal year 2002 shipbuilding budget and a notional future shipbuilding profile on the surface combatant industrial base.

SUMMARY

We are institutionalizing reforms that make acquisition success a common occurrence. We continue to communicate fully and openly with Congress, industry, our warfighters, and our acquisition professionals, and are doing everything it takes to make sure our sailors and marines are provided with the safest, most dependable, and highest performance equipment available within fiscal constraints. We appreciate the support provided by Congress and look forward to working together with this committee toward a secure future for our Nation. Mr. Chairman, the Navy and Marine Corps acquisition team is continuing to work very hard to build the best shipbuilding acquisition programs that maximize our current benefits while buying smart for the future.

Senator KENNEDY. Secretary Young.

STATEMENT OF HON. JOHN J. YOUNG, JR., ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

Mr. YOUNG. Mr. Chairman and distinguished members of the subcommittee, it is an honor and a privilege to appear before you to provide my first testimony as the Navy's acquisition executive, and to talk with you about the Department of Navy's fiscal year 2002 budget request for ship programs.

Admiral Fallon has spoken about our Navy's continuous worldwide presence in the areas of national interest. Our Navy and Marine Corps team performs this role as brilliantly in 2001 as they did during the preceding century. I will be working to ensure that the team continues to be provided with the warfare-ready ships needed to perform that mission.

The President's budget request calls for construction of six ships in fiscal year 2002. Included is \$2.97 billion for procurement of three DDG-51 destroyers, one additional DDG over last year's budget plan, and half of the total number of ships requested. Procurement of these destroyers is essential to maintaining not only our force structure, but also the surface combatant industrial base.

Funding is also requested for the fourth *Virginia*-class submarine. The fourth ship is part of the unique, single contracting construction teaming plan approved by Congress in 1998. This pro-

vides a cost-effective, steady production rate that helps both shipbuilders achieve level manning and more economic materiel buys for the class.

As authorized by Congress, the budget request includes incremental funding for a gas turbine-powered variant of the *Tarawa*-class amphibious assault ship. The all-electric design of LHD-8 offers an estimated total ownership cost savings of \$400 million over the 40-year service life of this ship. A construction contract award is planned for December 2001 for LHD-8.

The sixth ship in the Navy's 2002 construction plan is represented by the \$371 million in funding requested for the third T-AKE auxiliary dry cargo ship. These ships are urgently needed to replace the 30-year-old auxiliaries that are rapidly reaching the end of their useful service lives. We are on the verge of awarding the contract for design and construction of this 12-ship class.

In addition to the six new construction ships, the fiscal year 2002 budget request includes important budget items for advanced procurement, funding seven new warships. They include \$421 million for the next four LPD-17s; funding for long lead materiel for the fifth and sixth *Virginia*-class submarines; the first procurement funding request for the CUNX-1; and the first new class of aircraft carrier since the *Nimitz* was authorized in 1960s.

In addition to construction, the Navy has a number of significant modernization and conversion programs, design and advance procurement requests for materiel conversion to *Ohio*-class submarines, two ballistic missile submarines; U.S.S. *Dwight D. Eisenhower* and U.S.S. *Carl Vinson* refueling complex overhauls; refueling two *Los Angeles*-class submarines, U.S.S. *Houston* and U.S.S. *Buffalo*; materiel procurement and engineering for the first *Ticonderoga*-class conversions scheduled for fiscal year 2005; and two LCAC service life extensions.

The fiscal year 2002 budget request also includes \$643 million to continue development of the 21st century land attack destroyer DD 21. The Navy has temporarily held the completion of source selection in abeyance, but remains committed to the key objectives and technologies associated with DD 21. Until the source selection is completed, work on DD 21 technology continues unabated under our existing contracts with industry.

Fiscal year 2002 research and development funding is critical for the work on key DD 21 system technologies. We need to have these funds in order to proceed with the program with little impact due to the slip in source selection.

In addition to these programs in construction, conversion, and fleet modernization, I must highlight the final feature, as the chairman noted, for the request for fiscal year 2002 for prior year shipbuilding. The funding required to complete construction of ships currently under contract has increased significantly, as the Secretary has testified. Many factors, detailed to some extent in my written testimony, have contributed to the cost growth of these ships. The \$800 million requested addresses the funding required to execute the prior year programs during fiscal year 2002. The program consequences of receiving funding below the request are very serious, and they will have a dramatic impact on the Navy's ability to proceed in 2002.

Mr. Chairman, I will conclude my remarks with a frank observation not unlike that of Admiral Fallon. The fiscal year 2002 budget request, if approved by Congress, marks the third consecutive year for six new construction Navy ships. This is an inadequate rate to maintain the present force, as committee members have noted.

The Navy will need additional ships in the future to sustain the fleet. I look forward to working with Secretary England, Under Secretary of Defense Aldridge, Secretary Rumsfeld, and the members of this committee to try and maintain our national shipbuilding industrial base and ensure we have a fleet appropriate to the future mission.

Thank you for your help, and I appreciate the opportunity to respond to your questions.

Senator KENNEDY. Thank you very much. I recognize Senator Sessions.

Senator SESSIONS. I would just make a brief comment. I thank you, Mr. Chairman, for hosting this subcommittee. It is something that is our responsibility to do. We are looking at the numbers, my staff and I, and I wish there were more money. I wish we could improve the amount of funding for shipbuilding.

We need to get that number up. I support that, but sometimes you wonder. We have a big increase, the biggest increase in defense budget in sometime, and I know we set priorities of personnel and health, but maybe we need to make sure that the shipbuilding program is getting its fair share.

At this point I would like to submit my statement for the record.
[The prepared statement of Senator Sessions follows:]

PREPARED STATEMENT BY SENATOR JEFF SESSIONS

Article I, Section 8 of the U.S. Constitution gives Congress the "power to . . . provide for the common Defence" and "to provide and maintain a Navy." The framers of the constitution recognized, as we do today, that we are a nation dependent on keeping the sea lanes of communication open.

While the microchip, the internet, and satellite communications have driven a revolution in communications, transporting goods from one nation to another still depends on ships and their freedom to transit from one port to another. Navy ships patrol the oceans and littorals of the world ensuring freedom of navigation for maritime commerce in a global economy. They provide stability that reassures allies, which then results in confidence that leads to investment.

The Navy *is* ships and the people on those ships which provide a visible commitment by the United States. Sailors and marines, capable of projecting lethal power, provide the deterrence which enables diplomatic and other efforts the opportunity to solve regional issues. The Marine Corps and Navy team also create the conditions that ease the entry of joint forces, when required, including area defense and secure points of debarkation for follow-on forces.

The requirements for ships are generated and scrutinized first by the Navy staff and then by the Joint Requirements Oversight Council. Once the requirements are validated, the acquisition community establishes a program to design and produce the ships from private shipyards. The acquisition strategy and program milestones are approved by the Defense Acquisition Board.

Construction of Navy ships requires some unique skills and facilities that have no commercial shipbuilding equivalents. This requires the Navy to retain knowledgeable professionals who understand the complexity of building combatants and integrating combat systems into unique hulls. These professionals must have the ability to estimate, negotiate, contract, and manage ship construction programs without relying solely on information provided by shipyards.

The reduction in shipbuilding budgets has led to inefficient production levels, a diminishing vendor base, and the consolidation of shipyards. There have been instances of directed procurement to maintain the industrial base required for national security.

This subcommittee has gone to great lengths to establish that a \$10 to \$12 billion annual shipbuilding investment is required to maintain a Navy of about 300 ships. The new national security strategy and Department of Defense strategic review will outline the force structure required to carry out that new strategy. Congress will then review the strategy and implications for Navy ship force structure. No matter what the result of the review is, one issue is crystal clear: If 300 or more ships are needed, it will require a significant increase to the annual shipbuilding investment.

Representatives of industry testified at our subcommittee hearing in April that the industrial base will adjust to build the number of ships required by the Navy. They stated that efficiencies in production and accurate ship cost estimates will result from a contracting commitment for groups of ships with a stable configuration, rather than contracting for a single ship with an evolving design.

Understanding the Navy's ship procurement and ship research and development budget request for fiscal year 2002 and the Chief of Naval Operations' fiscal year 2002 unfunded requirements pose a challenge for this subcommittee due to the short period of time available to review the justification materials. That challenge makes this hearing very important because it provides the Navy an opportunity to explain and justify the budget request.

I hope our witnesses today can clarify the following questions regarding the challenges we face together regarding building quality and complex ships:

- What is the process and Navy participation in the shipbuilding review that is ongoing by the Office of the Secretary of Defense?
- What are the industrial base issues and capability tradeoffs associated with the fiscal year 2002 budget request and pending ship acquisition contracts?
- What funding alternatives will lower the unit cost of ships and are those alternatives included in this budget request?
- Does the Navy understand the shipbuilding cost drivers and is there a plan to mitigate the impact of those drivers on the cost of Navy ships?
- Is the Navy buying the right types of ships for future requirements?
- Is the research and development request for future ships based on a disciplined requirements process which includes the Joint Requirements Oversight Council?
- Are there ways to minimize the reported cost increases and schedule delays associated with some Navy ship construction programs?

I join our chairman in welcoming Admiral Fallon, who has testified previously before this subcommittee, as a Fleet Commander, and Secretary Young, who we congratulate on assuming his new position. We look forward to working with both of you on these important issues.

Thank you, Mr. Chairman.

Senator KENNEDY. Thank you very much, Senator Sessions. If we could go to the cost growth on the prior year programs, I mentioned to Secretary Young that the budget request includes the \$800 million for completion of the prior years' shipbuilding. Secretary England is quoted as saying he believes that strong measures need to be taken in order to avoid a situation where the bulk of some future year's shipbuilding budget is taken up by the need to finish paying for ships that were approved in the earlier budgets. Secretary Young, can you assure us, based on your own best estimates at this time, that the fiscal year 2002 shipbuilding budget is fully funded?

Mr. YOUNG. Based on the briefings I received to date, my understanding is that as long as we receive \$800 million, as well as the amounts requested in the budget for the programs I outlined in my statement, we have a program the Navy can execute in fiscal year 2002.

Senator KENNEDY. How much more will be required to fix all of the prior years' shipbuilding programs? Have you made an estimate?

Mr. YOUNG. Yes, sir. We continue to work those numbers. I think the current best estimate I can give you would be about \$1.6 bil-

lion, which is foreseen over the course of at least 2 or 3 years into the future, 2003 and beyond, to be sure we can complete the ships we currently have under contract and construction.

Senator KENNEDY. Do you have a suggestion that you would care to share with the subcommittee about the ways to improve the cost and management controls on the shipbuilding acquisition process?

Mr. YOUNG. I will be honest with you. I would like to take the opportunity to do my homework a little better. However, in DDG-51 we have seen great success with the multiyear procurement strategy. I intend to go out and visit the shipyards and see if there are smarter ways to do business.

The Secretary has asked that my office take a very hard look at the change orders and that process. Change orders that have an impact on cost are likely to be deferred in the future until we are confident we have our hands totally around this issue and can begin to restrain and reduce the amounts of funds that we have to budget for prior year completion.

Senator KENNEDY. You are familiar with the different alternative ways that have been suggested and actually have been tried, and some were more successful than others in terms of the past. There are some logical steps, obviously, when you are doing aircraft carriers, given the time that is necessary to build those, and the differences also with regard to the destroyers, because you are building a number of them over a longer period of time. There are different modalities that have been tried and tested, and we are very interested on this subcommittee in getting your best judgment about the ways to proceed.

We get a lot of advice from a lot of different groups, but we are very interested in getting yours as early as possible.

Admiral Fallon, I remember the difficulties I mentioned and the problems with mine warfare. I firmly believe that mines continue to present a serious threat both to the Navy and Marine Corps forces. Do you agree that the mines continue to pose a threat to the naval and marine forces?

Admiral FALLON. Yes, Senator. This is clearly a serious threat, and it is a threat because it is a technology, a lot of it, that is available worldwide and is relatively inexpensive to acquire. It provides nations that do not have a lot of resources with weapons that can be serious impediments to successful completion of operations, particularly in the in-shore areas. It is incumbent upon us to work this problem as hard as we can and to try and make progress.

I can tell you personally that this has been a very high interest of mine. My previous assignment as a fleet commander in Norfolk included the responsibility for preparing our forces to go overseas and to operate in those littoral areas. We have devoted a lot of effort in this particular area over the last decade. I think we have a way to go. We have programs in place that are working in the area of new technology, and frankly, we are waiting to see how these things deliver.

There is a program we think is adequately funded. We know that there are lots of ideas out there. I personally watched several of these technologies being implemented. There was the advanced concept technology demonstration a couple of years ago in which

most of those techniques that are being moved toward fleet implementation were demonstrated.

I thought some of them were very innovative, but at the end of the day the reality is this: in this business there are no magic answers. There is no clean, easy way to do this. It requires a tremendous amount of work, because every single object that is identified, assuming we can locate the object, has to be identified and classified as either a threat or a non-threat. It just makes the job very demanding, particularly when you add in the realities of working in the in-shore areas. So we are moving forward.

I would also pass on to the subcommittee that it is my belief, and the CNOs, that this business of mine warfare needs to be thoroughly integrated into every-day operations in the fleet, not just delegated. As you are well aware, we have a Mine Command headquartered in Ingleside, Texas that is devoted to mine warfare. I have an Admiral in charge. He has a fleet of ships and aircraft that he works with, and he is focused on this issue.

The bigger challenge for us is to get the attention resident in the minds of all of our operational commanders so that they are thinking and working this all the time. That has been the thrust of our efforts lately.

Senator KENNEDY. I was interested why the Navy was altering or redirecting funding on the shallow water assault breaching (SABRE) system and distributed explosive technology (DET) shallow mine-breaching system when it has no near-term alternative to field or accomplish the mission. I understand it was done because they have testing problems. Do you want to explain, please?

Admiral FALLON. Yes, sir, Senator. The fleet operators who use this system and evaluate its potential and performance reported back that the system has a very large footprint which must be carried into the surf zone on some vessel, an LCAC, primarily. To properly employ the system, the assumption is that we need to know precisely where we are, first of all, so that the craft going into that area is going to be able to survive and not become a victim.

That was typically an issue with these vessels as they went through the demonstrations. The ability to get this vessel at the precise point needed to actually launch the lines out to do the work was a continuing issue.

The next issue was that once the system was deployed it was kind of a pay your nickel: take your chances on if the job has been done and if the system effectively took care of the threat. We were sending troops into that lane behind this device, and the confidence level was not where the operational commanders thought it ought to be.

So the bottom line is that the system had potential, yet we did not think it was the right answer, given the priorities we had. The recommendation was to pursue other technologies to try and do the job.

Senator KENNEDY. I had heard that the operational testing was for some 50 yards lane width on this, and then after they had the testing they changed the requirement for that from 50 yards to 75 yards. Are you familiar with that requirement?

Admiral FALLON. Senator, I cannot give you the detail down to that level. I would be happy to take the question and get back to you, though.

[The information follows:]

In December 1994, Navy identified the requirement for a 50 yard wide amphibious assault lane. The Shallow Water Assault Breaching (SABRE) System and Distributed Explosive Technology (DET) were developed with this lane width requirement.

Fleet exercises have highlighted the need for a larger lane to accommodate current and future displacement and non-displacement landing craft (LCAC, LCU, AAV). This is due to inherent navigation limitations, the extreme dynamics of the surf action zone, and the nature of the required operations and tactics. Fleet operational experience suggests that a 75 yard wide lane is the minimum assault lane width requirement, though this could increase to 100 yards, 150 yards, or larger. The fleet is currently tasked with validating the lane requirement.

Senator KENNEDY. I appreciate that. What I had heard is that it had met its requirements, but then those changed, and so there was a question about whether they complied with the second level. The money has been redirected, and I am in favor of the program for which it has been redirected. However, I am very concerned about taking it out of this fund, and you might provide some additional information on it.

My time is up. Senator Sessions.

Senator SESSIONS. Thank you. Admiral Fallon, you mentioned the figure, and I did not quite understand what you said. Did you say \$34 billion on procurement? That is over what period? What did you mean by that?

Admiral FALLON. Senator, we are spending about \$24 billion right now on procurement. We think we need to be spending \$10 or \$12 billion more a year to really be able to adequately address modernization.

Why are we at that number? There are many factors, but the bottom line is that our best assessment of where we are today, given the fact that we have pretty consistently underfunded for various reasons our modernization accounts for quite a few years now. We require that amount of money for some sustained period to get the nose of this program back up in the air again, and that is both shipbuilding and aircraft.

Senator SESSIONS. I appreciate that, and I am sure that is what we would like to have.

Secretary Young, the budget is \$328 billion this year, is that correct? Last year we were at \$296 billion, so that represents a \$32-billion increase, the largest increase in over a decade. Why are we having so slow an impact on shipbuilding?

Mr. YOUNG. I will try to answer your questions as best as I can.

Senator SESSIONS. I know a lot of this money we put on personnel. We mandated it. We felt it was necessary and the Defense Department felt it was necessary also, so that took a big chunk out of it. But where are we there?

Mr. YOUNG. The bulk of the increase this year went into the defense health program. We have had to continually put supplemental funds into the health issues. Also, the military pay raise, as well as retirement costs, are going to add every year to the bottom line. We cannot avoid those costs. They have to be added and funded. They are essentially mandatory.

There are other shortfalls we dealt with. I do not know if the Admiral wanted to speak and address that question also.

Admiral FALLON. Thank you, Mr. Young.

Senator, if I could, this was not just a random, let's throw some money at something in a year. The idea here, the strategy was that in 2001, in which we still have a couple of months to go, that we would make every attempt to ensure that we did not have significant breakage in the force between now and the end of the year. The priority was into funding those things that we needed to fix in the near term.

Frankly, we were going to run out of money very soon in the programs, and a lot of personnel accounts, many of which, by the way, are a good story, thanks to the tremendous report we have received from this committee and from the Members of the House. But the plan was to get us through 2001 so that we were able to get into the 2002 fiscal arena with an identified number that would start getting us out of this continual shooting-behind-the-rabbit problem. The idea was that we would identify a number in 2002 that would obviate the necessity to have another supplemental at the end of that year, and we stacked up our priorities, people first.

We figured even if we had the money to build all the ships in the world, if we did not have a force that could man them we were pretty much wasting those dollars. We went after continuing to rebuild our force and our people to give us a foundation. The assumption was that as we got into 2003, we could then start moving up the glide slope to get well. But the key factor was to fix damage right now, to put ourselves in a firm foundation in 2002, and to fix the rest of the people programs and the rest of the things, primarily, in the near term area, so that we could then get moving in 2003.

The dilemma right now is, we are not finished with 2001, the 2002 bill is on the Hill, and as we deliberate how to get into the 2003 and beyond budget, we still have the uncertainty of exactly where we will end up at 2002, but that is in fact what we did, sir, and that was the thinking.

Senator SESSIONS. I am going to have to run to vote, but I would just say to you, the marines have some requests, the Air Force has some requests, and the Army wants to transform. In the course of evaluating the Navy, you are going to have to ask yourself what is a realistic expectation of increased procurement funds and configure a Navy that is within that realistic range.

I had hoped that we would be in a better position, but there are a lot of competing demands out there. I salute Secretary Rumsfeld for looking at this thing from top to bottom, and maybe in the course of that there can be savings achieved and generations leaped. Money can be applied to this kind of a program that does not now appear to be available, and so all of us are going to have to confront every assumption we have had to maintain the quality of the defense force and Navy we would like to have and maintain. Like you, I believe at some point you have to have a ship to project our power. You simply have to have the ship there.

Excuse me. We are going to have to adjourn for a few minutes. We will be right back after this vote. [Recess.]

Senator REED. Senator Kennedy advised me to start. Let me first thank you all for your testimony.

Mr. Young and Admiral Fallon, let me raise a question. When the Chief of Naval Operations came before us a few weeks ago, I asked what plans were being made for the four Trident submarines that could potentially be converted. As you well know, the first two are now ready. It is a four-boat conversion. Two are coming offline later. The decision at that point had not been made whether the money would apply to the first two or second two.

I believe the decision has been made to forego the first two Trident ships and convert the latter two. Mr. Secretary, is that correct? Has the decision been made?

Mr. YOUNG. My understanding is that the budget now makes the assumption that the second two will be in the plan for the conversion program. However, there is funding in the budget right now for only two submarines, with the earlier subs to be decommissioned. I believe there is discussion about whether funds might be added in different bills to preserve the choice on those two submarines.

Senator REED. Admiral Fallon, any elaboration?

Admiral FALLON. Yes, sir, if I could. The big picture, as I see it, with the SSGN, is that it had a lot of potential. Its transformational, and it is a different way to approach a challenge. It is a way to potentially have an awful lot of fire power in a platform that is very covert, and there are all kinds of piggyback opportunities here, maybe with SOF. I know you are aware of that.

The dilemma is the funding. The easy part here, to my way of thinking, is to put an amount of money in this year or next year and to say, "we like it, we can figure out how to do this." The challenge that we worry about is the tail. The reality of it is that there is nothing but goodness in the idea that we take a platform that has a tremendous amount of service life left in it and save whatever the initial investment is in rebuilding a new vessel.

We have one that has a lot of years on it, and we have it in hand, and with a minimum amount of time and relatively small amount of money, we could turn it into something that is a very useful platform to do some of these things. However, the reality is the cost of planning for that ship includes getting all of the money to do the complete conversion, operating the ship, buying the weapons, paying for the crew, and then planning and doing the upgrades.

We laid that out from now until the end of the estimated service life. It presents a bill that has to be weighed off against the other potential uses for those resources. We are in a position where, to answer your direct question, as the Secretary has already indicated, we are headed right now, given the info we know.

I think it is possible to go back and do the other four at this time if the resources were made available, but there are several factors. What is the cost of doing that, and what is the total bill? Again, there is an optimum way to do it, and there are ways that could get the job done with more money at some amount of time. But the real dilemma is how do we weigh off this need versus the other requirements in making those decisions? It is pretty hard.

I have found that, particularly in this business, the questions this subcommittee is interested in have no one-shot answers. All of these things have a tail that we have to consider. This is the reality of doing business the way we have done it in recent years, where we have consistently procured things at the less-than-optimum rate.

I do not think we have a program in the Navy right now that is being operated at its most efficient procurement rate. So, when you start factoring those things in, the potential for those bills gets high, but I think there are some options now. We could go several different ways, but right now we are leaning toward two and trying to figure out how we can wedge that money to take care of it.

Senator REED. I think both of your responses point out the dilemma we have. What is a transformational ship, potentially, moving from a ballistic missile submarine to a conventional land attack cruise-missile-firing submarine with special operations capacities, able to operate in deep water and littoral waters, something I think the strategists are trying to drive the Navy in this direction, yet because of the budget constraints, we cannot exercise the full four. Again, just to understand your response, it seems fairly certain that at least the last two will be converted. Does the budget reflect that, Admiral or Secretary Young, to a 90-degree certainty, that the last two are programmed now to be converted, at least the last two?

Mr. YOUNG. The last two or four?

Senator REED. The last two of the four that are coming out of the fleet.

Mr. YOUNG. I may not fully understand the question because there are D-5 conversion issues with this. Regarding the potential for the early two, there are different strategies that are being looked at internally, and I apologize.

Senator REED. That is fair, but let me rephrase the question. We have identified four Tridents for possible conversion. They are coming out in a sequence. Are you saying that, based on other factors, the first ship could be converted, or the third ship could be converted, or the fourth ship, or do we forego the first two? I am just trying to get a sense of which ships we are talking about.

Mr. YOUNG. Again, Senator, there are two right now that the budget assumes would be decommissioned and defueled. Those could be caught if additional funds were made available, although that, as the Admiral accurately highlighted, is a near-term resource consideration.

My understanding is that there are a couple of submarines further out that could possibly be caught and converted. Likewise, you could decide on the two near-term ones that you would refuel them and execute the Trident II D-5 conversions on them. There are still some strategy issues that relate back to resources on which conversions to do. There is an opportunity, I believe, if we miss these two boats, to still get four SSGN conversions, if you will, although there are people that are certainly very anxious to avoid seeing these two submarines just decommissioned and defueled.

Is that fair, sir?

Senator REED. That helps clarify. One final point would just be that there is a worst-case possibility that you would decommission

these two ships and then 1 or 2 years out we would have the same dilemma. Where do we get the money for the conversion of the remaining Tridents that are coming out of the fleet? Is that dilemma still with us? Have we committed in this budget to convert two Tridents, and if so, which two? It is only an operational question.

Mr. YOUNG. I do not think the budget commits to two additional. It only commits to starting the process for two conversions. The option is still being considered almost daily within the Department for the other two, including the Secretary asking questions about what smart things we can do to avoid the commitment to decommission and defuel. He would like to see if we can tie these up, if you will, and try to hold that option open for as long as possible. We really are working this almost on a daily basis.

Senator REED. Thank you, Mr. Secretary. Admiral, do you have a comment?

Admiral FALLON. Senator, the only thing I would add is, to the best of my knowledge, we have not identified by hulls—I am sure people have ideas of what hull numbers would be the likely suspects here, but the program of record is for the advance procurement to get lined up. I think we still have the flexibility to pick and choose which actual hulls, and some might be done a little more efficiently than others. If I had a vote on this one I would say, we will do it when we can identify the ability to pay for the whole program and we do it in context.

There are some 688s out there that with a refueling have another potential long service life. As we look at the capabilities of the submarine force and what they can do taking into account the transformational nature of this thing, we are weighing off just how much money to put into the programs, which one gives us more bang for the buck and so forth.

Senator REED. Thank you. My time has expired but no other colleagues have joined me, so I will ask one more question. We all understand we have a train wreck ahead. That is probably not the right metaphor for sailors, but we have a problem looming over the horizon, which is the insufficient number of ships in the fleet.

There are two ways, at least, to approach that. One is to build more ships. Another is to go in and make serious expenditures to extend the life cycle of existing ships in the fleet. I would pose this question to you, Admiral Fallon: What is the consideration of extending the life cycle? How much will that buy us in lieu of new ship construction? Are we exploring all of that potential? Where are we in that mix between construction and life cycle extension?

Admiral FALLON. Senator, thank you. I think this is one that lends itself to an analogy of those who spend time in the gym with a barbell. In this case the two ends of the barbell are first, the current readiness and upkeep of the force, and second, modernization and looking to the future. These things need to be kept in some kind of balance or the thing is going to fall down and come out of your hands.

I believe you have to make a capital investment in a vessel with the expectation that at some point during the life of that vessel we are going to undertake those measures to keep her at as close to the cutting edge as we can, with the realization that the longer we

keep the platform in service, the more operating and support costs are likely to mount.

We see this in spades in airplanes, because of the environment. But it is clearly applicable to ships, and at some point in time we have to be looking to the future and recognizing that some new technologies do not lend themselves very well to adaptation. It is very apparent today that technologies exist which will enable us to do the job, to operate vessels at sea, with a much smaller manning factor than is required today. But that is not something we can just wave a wand and magically make happen.

Platforms are designed with certain features. It happens to be today that some of them have been around for a while, and are very manpower-intensive. That is not easy to fix. That is why something like DD 21 is so appealing to us, because the expectation is that this platform is going to deliver a design capability that will be much easier to maintain, so the reality is, you have to do both.

The real dilemma today is that we are actually short-sheeting both ends of the equation. We are not investing enough, we think, into the upkeep and revitalization of existing platforms, and at the same time we are clearly not buying enough new ones. So the answer, in short, is that you have to do both, and somehow we have to figure out a way to get the resources either from within or without to do that.

Senator REED. Your forward-planning, I presume, goes at least 5 years out, is that accurate?

Admiral FALLON. Yes, sir.

Senator REED. Have you been given specific instructions to consider the adaptation to the fleet to missile defense forces, other than the current Navy-wide and area-wide systems, such as a system that would be part of what is now called a multi-layered national missile defense?

Admiral FALLON. I think it would be fair to say there is no specific guidance as yet. Clearly, there is an expectation that we are going to look very hard in this area, and we in the Navy are going to look and see what role we can play. We think we have a lot of footprints in the sand already in this area, a lot of experience, and we are trying to put ourselves in a position where that experience that we have can be applied to whatever programs that are eventually going to come out of this. We stand by ready to help in any way we can.

Senator REED. I presume, though, any developments along those lines would require you to do new construction or retrofitting with respect to sensors, radars, launchers, items of equipment that are both expensive, and also require the kind of design and planning that cannot be done in a weekend.

Admiral FALLON. That is absolutely right.

Mr. YOUNG. I think you are absolutely right, and the Admiral and I have had discussions about this. Cruiser conversion is something the Navy is internally studying. Those ships might be good candidates for the radars and the missiles that you are talking about. The DD 21s obviously are already potential carriers for the Navy area system, and we continue to work that. I want to take a second, if I could, just repeat, the Navy stands ready to support

a missile defense effort. However, we do not have guidance to take any particular vectors right now.

Senator REED. My presumption would be that this is a somewhat novel and sophisticated endeavor, so that from the time of instructions to the time of just design, it is far from construction. You are talking years. You are not talking weeks or months.

Admiral FALLON. This is not weeks and months. This is going to require long-term investment. We can already see, at least in the vision that, limited as we humans have, we think we see a couple of areas that appear to be at least markers on the path to the future. One is continued development of radars, building on our Aegis-based baseline that is currently in the fleet and those under development, to look to the future, and then the cooperative engagement capability, which has just undergone its OPEVAL, and seems to have tremendous potential for linking lots of sensors in the network. We think these are pretty valuable markers in our trail to the future.

We would like to take both of those capabilities and figure out a way to pay for them in the cruiser upgrade program for those platforms we already have, obviously in DD 21, and hook back to the new CVN to have radar in those that is going to be able to be not only compatible with these other platforms, but something that gives us that capability in the future. Obviously, that is still in design.

Senator REED. But the wish and hope is not fully funded in this budget?

Admiral FALLON. No. We are going to have to figure out a way. We expect that this would be part of the program in DD 21 and CVN-X, but we will have to figure out a way to put it in the cruiser conversion. We have a small down payment in 2002. Again, this has a tail that we need to be sure we fund.

Senator REED. Thank you, Mr. Secretary, and thank you, Admiral. I will recess the hearing until we are joined by other colleagues. We stand in recess. [Recess.]

Let me reconvene the hearing and recognize the Senator from Maine for her questions and for as much time as she wants, or until Senator Kennedy arrives.

Senator COLLINS. Thank you very much, Mr. Chairman.

Secretary Young and Admiral Fallon, I was pleased to see in your statement that you wrote, "the DD 21 and her associated technologies represent the future of the surface Navy, and DD 21 represents the type of change that the greater Navy needs to be an affordable and potent force." You probably will not be surprised to learn I agree wholeheartedly with those comments.

Many senators on this subcommittee were very concerned in May when the Navy announced its decision to delay the selection of a lead shipyard, particularly since the two teams have been working so hard and had made so much progress. This came as quite a surprise to our shipbuilders who had been working so diligently in these partnerships.

There are now reports that a decision is imminent in the Department of Defense to move ahead with the DD 21 destroyer program and to move ahead with the down-select. Could you comment on

the status of moving ahead with the down-selection? Secretary Young or Admiral Fallon?

Mr. YOUNG. I think we are working on a daily basis to provide the inputs to OSD on the shipbuilding review and QDR process. That was one major factor in delaying the down-select decision. We are trying to make sure they have everything they need. The Navy is a participant in those discussions and those decisions about how the shipbuilding program of the future looks.

Likewise, we are taking the time to make sure that we have the DD 21 strategy right. We would like to proceed with source selection as soon as we feel like we have the right strategy. We know that from Secretary Rumsfeld on down our strategy supports the program, so we are moving forward. Whether it would be described as imminent, I do not know, but I would say the Navy wants to move forward and we are moving forward in the program with regard to the systems that would support DD 21.

We particularly cannot let the volume search radar and multi-function radar fall behind schedule. The CVN-77 needs those systems. Furthermore, the gun system, the radar, and some of the manning concepts that we might be able to retrofit onto our existing destroyers, cruisers, and other ships are moving forward. We are keeping both teams working on their technologies to try to make sure that we do not lose ground during this pause in the source selection, which is not a pause in the program's technology work.

Senator COLLINS. Can you give me any further guidance on the time line for making a decision on source selection?

Mr. YOUNG. Senator, I think I would love to do that. I am not sure that I have that answer yet. Whether or not we have to wait for a QDR result in September is not clear to me. I am not sure we do, but I am also not sure we do not. I will try to get you a better comfort level with that answer, but I personally cannot offer you a lot more comfort yet until I have some discussions and have a firm sense on what OSD wants from the Navy as well as what we need to provide them if we have not answered all their questions.

Senator COLLINS. One of the concerns that I have in regards to maintaining a strong shipbuilding industrial base is that we need to have a bridge between the DDG-51 Aegis destroyer program and the new DD 21 destroyer program, particularly if there is any slippage in the schedule or number of ships that are projected to be procured under the DD 21 program. Admiral, could you comment on the need for a bridge to ensure that we do not lose our shipbuilding expertise and our base?

Admiral FALLON. You have hit the nail on the head in that regard, Senator. Clearly, we want the transformational capabilities that we see coming in DD 21, but we also, as I mentioned earlier, have to have numbers, and we are going to try and take whatever steps are required to assure that we have those numbers. We are acutely aware of the industrial base issue and the need to maintain some continuity with people that have those skills to build the ships.

The answer is that we clearly want to do what you have in mind, and depending upon how things work, the outcome and the timing

of the DD 21, we will take what we think are the necessary steps. We will recommend taking those steps that will do exactly what you want: keep the expertise moving and hopefully do something to get this ship curve moving upwards, instead of the glide slope we are on right now.

Senator COLLINS. Admiral, in your testimony you also commented on some of the advantages of the DD 21. For example, potentially you have lower total ownership costs, you have two-thirds the operating cost, and one-third of the crew necessary, compared to our traditional destroyers. Is it also accurate to say the DD 21 is the only platform currently slated to meet the Marine Corps' fire support needs with the advanced gun systems and the extended range guided munitions?

Admiral FALLON. We clearly see the potential to do all of those things that you mentioned. We would like to see the program deliver those kinds of numbers. We believe that this program will, in fact, adequately address the Marine requirement. It will give them the capability and fire power that we do not possess right now, and we think, in fact, it will meet their requirements.

Senator COLLINS. Thank you, Mr. Chairman.

Senator KENNEDY. This is the point, as well, that I wanted to mention in terms of the fire support capability that is in the DD 21, which the Marines are counting on. There is a certain sense of urgency as to when we will know something more. I know that you gave some responses to questions while I was absent. Did you indicate when we would have a better idea of what the scheduling would be on the decisionmaking?

Senator COLLINS. I am waiting to see if the chairman gets a more direct answer, which I hope he will. Excuse me for interjecting.

Mr. YOUNG. Mr. Chairman, Senator Collins very effectively asked me that question. To summarize, I told her that we are somewhat hung up by the QDR and shipbuilding reviews in OSD. We are feeding those efforts as rapidly as we can. It is not clear to me that we can proceed in advance of the QDR, but it is also not clear to me that we cannot, so I do not have a date.

Senator KENNEDY. On that question, whether you need a QDR or not, when will you know that? When will you know whether or not you need to have the QDR?

Mr. YOUNG. We will have the QDR. Whether that result would have any impact on the DD 21, or whether there is enough insight at Secretary Rumsfeld's level that the DD 21 will be a winner and be able to proceed as it is formed is not clear at this time. However, the Navy is very confident it will be the ship of the future, as we have testified.

Senator KENNEDY. I did not do any better than you did, Senator Collins. I will continue to press along, because I think there are so many important issues that are wrapped up not only in the ship, but also in the technologies and in the fire power.

Did you address what action the Navy is taking to ensure protecting the schedule on the technology insertions and protecting the schedule for the DD 21?

Mr. YOUNG. Yes, Senator, we talked for a minute about that, and I tried to assure the Senator that we are proceeding with all of

those key technology efforts—the gun system, the radar, some of the minimal manning technology concepts, and the integrated power system.

We are proceeding with both teams to make every effort to keep the program on track so that when there is a source selection we can recover the schedule and move forward. Some of those technologies like the MFR and VSR, the radars, are essential to CVN-77 and they have to stay on track, because they support ships beyond DD 21.

We are moving forward with all elements of DD 21 with both teams, which is why we are spending the money this year. We will need the money next year to allow the winning team to pick up any lost ground and also pick up on the efforts that they have successfully made with this year's money, even in spite of the lack of a down-select decision.

Senator KENNEDY. The volume search radar approach was to let the DD 21 winning team develop the radar as part of the final design. Are there enough funds to mature both designs in the absence of a DD 21 decision?

Mr. YOUNG. I think I can say that through fiscal year 2001 we have enough funds to proceed with the volume search radar. There may be small shortfalls. It is my understanding that the carrier design has the provision to accommodate both radars until we get that down-select decision. I believe we will manage through that issue. Both radars are proceeding with the 2001 funds. It will be critical to get the 2002 funds in order to keep that radar on schedule.

Senator KENNEDY. On the LPD-17 program, I mentioned in my opening comments that it has been experiencing serious problems. I suppose the problems are understandable since the Navy and the contractor are tackling a large effort. However, I am concerned there may be some process problems. I am troubled it took the Navy so long to inform the subcommittee of the nature of the difficulties even after they had been reported in the press. Do you have any comment about that?

Mr. YOUNG. Senator, I share your concerns. That is a program I have spent some time on and I intend to spend more time on. The Secretary shares those concerns. We have to find a comfort level that the LPD-17 is proceeding.

There are signs of that. The design drawings are 85 percent complete. Many of the production drawings that evolved from that have resulted in modules being built for the ship and are progressing at a 40 percent level, but I also would tell you what I have been told, that some of the tougher modules have yet to transition from design drawings to production drawings.

I can offer you that I will keep doing my homework here. I will let you know as fast as I can, because the Secretary is adamant we need to get this program in hand.

Senator KENNEDY. As I understand, the Navy knew in August 1999. Even after the repeated attempts by staff to gather additional information about the problem, the Navy did not provide a briefing until February 11, 2000. The more troubling problem is that the team at the contractor was able to hide the lack of

progress on the LPD design from the Navy, the buyer, until the completion of the sale of the shipyard to Ingalls Shipbuilding.

Mr. YOUNG. I do not have the perfect history of that, but I do know elements that you may also be aware of. As we try to take a different process to design this ship first and make sure it is producible, hopefully it will lower the cost from previous ships.

There definitely have been some learning pains in the shipyard in taking that new strategy, developing a tool that is capable of designing the ship, and then executing that tool in the production of the ship. I think there has been some weakness in the Navy's metrics for measuring the progress on both establishing that design tool and then executing that design tool. Those are the areas I am going to try to do some homework in to be able to tell you that that ship is coming along, hopefully on schedule.

Senator KENNEDY. Secretary Young, you had a reputation of being a dogged pursuer of facts and details on the committees here, so we will look forward to your digging into those and hearing from you.

Admiral FALLON. Senator, if I could add something on the LPD-17, this program is one of particular frustration to me, having watched this from outside of Washington, to be where we are now with the program, a couple of years behind schedule.

I probably know as well as most of my fleet brethren how critically we need this platform. We need it now, not in design stage, but we need the steel being put together. We need it in the fleet. If we do not have it, we are going to be faced with adding to our current dilemma. We will probably have to keep some of our old LPD-4 *Austin*-class ships around, which are 30-years-plus young.

To do that is going to require an ever-increasing amount of operations money to sustain them, just to band-aid them through the year. This is a real kick in the head to the fleet, so we are stomping up and down, for whatever good it does, to try and get to the bottom of what the issues are here so we can get moving, because we really need the program, and it is overdue now.

Senator KENNEDY. Senator Sessions.

Senator SESSIONS. There are 27 Aegis cruisers which range in age from 7 to 18 years. There is an opportunity to upgrade a number of these to improve their combat capability and reliability. Admiral Fallon, I would like your assessment of the capabilities and improvements that cruiser conversions would provide, and whether or not you consider these capabilities as incremental improvements, or as transformational capabilities.

In addition, Secretary Young, I would like for you to describe the acquisition strategy, what it is for the cruiser conversion program, and if there are efficiencies that could be attained in this program.

Admiral FALLON. Yes, sir, Senator. Cruiser conversion I would say, falls into both categories. There are some aspects of the proposed plan which would be transformational. I would categorize the incorporation of the CEC, the cooperative engagement capability, and the area-wide radar improvements in this regard.

There are some others, and one other one I might add is the electrification of the auxiliary systems to get rid of a lot of old steam-powered stuff and bells and whistles and things that have a lot of mechanical moving parts.

Senator SESSIONS. Admiral Fallon, on the electric conversion, is that proving to be as good as you had hoped? Are you confident that is going to be good?

Admiral FALLON. We have high expectations this technology is going to pay off. It is in many places around the world now, mostly commercial applications, but we see tremendous potential for it, and we are going after it as fast as we can.

Senator SESSIONS. Nothing suggests it will not work in the long run?

Admiral FALLON. No, sir, but the reality is, we have to take the specific application and put it in the platform, and the difficulties usually come in the integration piece. That is usually the biggest challenge. It is clear the technology is out there and it works.

The second area, back to the other part of your question, is that there are other things that are upgrades I would consider in the normal course of the life of a platform that we think are necessary. Some of those go to the ability to do self-defense, to run the ship more efficiently and more effectively, and hopefully reduce some of those operational costs as the ships extend their lives. I think this program would satisfy itches on both sides of the fence, and that is one of the reasons we would clearly like to do it.

The key thing here is that with those upgrades, we believe a platform which is already in the water, already exists, has the potential to serve us very well for many years into the future. The alternative is to start from scratch and build new platforms, and we think we can leverage what we already have, so that is why the program is highly attractive.

Senator SESSIONS. This cooperative engagement capability would provide you substantially increased defense capability against a missile attack.

Admiral FALLON. We see this as a potential stepping stone into the missile defense arena, rather than just an envelope around an individual platform. Yes, sir.

Mr. YOUNG. Senator, we talked about this briefly before the hearing, so hopefully I have a handle on some of the answers. There is a small amount of money in fiscal year 2001 for the planning process, roughly \$165 million in the fiscal year 2002 budget for planning and design. Some of the validations the Admiral has highlighted regarding the technology pieces we would like to put in the cruiser conversion program. We are really in the early phases of defining what systems we would like to put on the cruiser. Specifically, what systems are mature enough, and what systems we need to bring along faster so they can catch the ride.

That strategy is fleshing itself out with what is in the fiscal year 2002 budget request. Decisions have to be made downstream to your bigger question about acquisition strategy, which factors into a competitive strategy, one or multiple yards. There also must be consideration, as we have always done, about where the ships are homeported and therefore whether there is a geographic aspect that ought to be considered in awarding the work.

Those decisions have not been made yet. We are making the first-step decisions about what systems we can reasonably put on there in terms of theater ballistic missile defense (TBMD), force protection, and the electric systems mods, as well as the minimal

manning concepts. Going back to something Admiral Fallon said earlier, we would like to be conscious of bringing down the manpower level required for these ships so that our operation and maintenance costs for these ships, once we do convert them and get them in the fleet, are lower than the costs we are currently experiencing.

Senator SESSIONS. As you go about it, we are not shooting behind the rabbit here in terms of being able to proceed in an efficient, steady, cost-effective way, maybe doing some advanced procurement for vendors and that sort of thing, to save money on those programs. I know when you are short you cannot take advantage, sometimes, of cost savings that are there, and sometimes we need to think as far ahead and be as clever as we possibly can be to take advantage of those cost savings.

Secretary Young, the committee has made an effort in the past to save taxpayers' money by continuing to provide funding for LHD-8. The funding was directed to be used to maintain the skilled worker and vendor base that was established in building the seven previous LHDs. In other words, continuing the production would have economies that could not be gained by stopping production at LHD-7 and then restarting it up a number of years later, as the Navy planned in their budget request. However, the Navy has been slow to put the ship on contract and take advantage of the opportunity enabled it by Congress.

What are the estimated savings attributed to continuing the LHD-production line to build the LHD-8? Has the Navy preserved the opportunity to save dollars by maintaining the LHD-skilled worker and vendor base, and what is the Navy plan for building LHD-8? What impact will that plan have on the total cost, and will it be up or not because of the break there?

Mr. YOUNG. Hopefully I will be able to answer your questions, Senator. As I commented earlier, with the decision to put gas turbines and electric systems in LHD-8, the Navy projects about a \$400 million life cycle cost savings for moving to that different concept, or different design within the ship's power plant.

Senator SESSIONS. Are you saying that by delaying—

Mr. YOUNG. No. I am just commenting on the life cycle cost by getting LHD-8 as a new design ship. As a step back, we have proceeded under the incremental funding strategy Congress has put in place with LHD-8.

I will have to get back to you for the record regarding what funds that has saved, but I think because Congress took that step and added those funds, and the Navy proceeded with construction under an incremental funding strategy, we have saved money on LHD-8.

The Navy has put the funds in this year to continue, this being in fiscal year 2002, that incremental construction strategy. We will award the contract for the ship this year, which is why you see we have counted the ship in this year's ship construction column as one of those six ships. We will finish out the ship through that incremental funding strategy. I believe that has stabilized the base for the vendor of the ship.

I will get back to you with the cost savings.

Senator SESSIONS. I have numbers that have been completed as originally contemplated in fiscal year 1999 or 2000. It would have been at one point \$2 billion, and now it will probably be \$1.8 billion because of the delays. Are you aware of that number?

Mr. YOUNG. Sir, I apologize, I will have to get back to you for the record. At one point, my understanding was there was a budgeted number that might have represented a target cost for the ship.

I am not prepared to tell you the precise estimate for the ship. The \$1.8 billion number certainly looks like what we are going to see the ship, but I am not sure that is driven dramatically by when we contracted for the ship. It is just the reality of what that ship is going to cost, especially with the design pieces we had to put in.

There is a possibility, and I will get back to you, that the \$1.2 billion number might have been associated with a carbon copy of LHD-7, but that goes back to the point that I made with you. We have changed this ship design to put in a gas turbine and electrical system, and there were some nonrecurring costs that are part of that \$1.8 billion number to give us a ship that has a different design and is more efficient to operate.

[The information referred to follows:]

By accelerating the LHD-8 from fiscal year 2005 to fiscal year 2002, the Navy estimated a cost savings of as much as \$500 million for minimizing the production break between LHD-7 and LHD-8 and averting the escalation impact. The Navy has preserved the opportunity to save dollars by maintaining the LHD-skilled worker and vendor base. The Navy's plan is to build LHD-8 using incremental funding without impact to the total cost of the ship.

Senator SESSIONS. It is one of the problems that the Chief of Naval Operations (CNO), as well as others, have talked to us about. In regards to up and down procurement situations in which similar lines are shut down and there are going to be costs for that, and to the extent to which we can plan effectively and work with Congress, we ought to do as much as possible. We know we have a ship to complete, and it is a shame to add to its cost.

Senator KENNEDY. Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman.

Admiral, General Whitlow testified before this subcommittee that the LPD-17 provides the capability to address missions that range from humanitarian missions to major theater war with forward-deployed forces. He further stated that the importance of the LPD-17 program is to provide three Marine expeditionary brigades-worth of lift, and that the LPD-17 is one of the most important assets that we will procure in the next couple of decades.

From a warfighting capabilities perspective, would you elaborate on the need for the LPD-17 program and, in general, do you agree with the General's comments?

Admiral FALLON. Senator, I agree with the General, as I mentioned earlier. First of all, there is frustration with the fact that this program is so slow in coming on line for all the reasons the General mentioned and a couple of others that I know from personal experience. The fact is that the ships that are in the force right now, great ships and crews that they are, are increasingly challenged to meet the requirements that we lay on them today.

They require an awful lot of maintenance and care. They are very manpower-intensive, and the sooner that we can get these

ships retired gracefully and in thanksgiving for their fine service, the better off we are going to be.

The LPD-17 program offers us the potential not only to have a new platform, but to incorporate the space in other enhancements that the General enumerated and, I think, gives us the kind of flexibility we need.

The reality today is that when our forces forward-deploy, we have this idea that we deploy them as an amphibious ready group. Typically, there are three ships, occasionally four, that go together and do the missions. But what we find increasingly in today's world is that when they actually get to the forward-deployed areas there is a multitude of tasks that await them. They have everything from the low end potential to do noncombatant evacuation operations (NEO) to a high-end combat situation, and at least as often as not, the ships end up being separated.

With the increased capability that would be inherent in the LPD-17, we feel much more comfortable sending these ships out on these multi-mission tasks we do today. The operational commanders will be standing up and cheering when the day arrives that we can finally get these ships in the fleet.

Senator COLLINS. Mr. Secretary, I would like to follow up on some questions that Senator Sessions raised about procurement with you. With your background, you have a special appreciation for the difficulties that we are going to face in trying to start addressing this very serious shortfall in investment in our shipbuilding. It seems to me we need to pursue creative and innovative procurement methods. Some of them, such as multiyear procurements, have already proven to work. We have saved significant sums, and I am often told we have been able to procure three ships at the cost of two through using multiyear procurements.

My first question is, do you intend to recommend a continuation of multiyear procurements for shipbuilding? Second, what is your judgment about the use of advanced appropriations to help us start recapitalizing our fleet?

Mr. YOUNG. Senator, regarding a multiyear procurement, my most direct experience here in the Senate is with aircraft programs, where it has been extremely effective. The Navy, through my discussions with my staff, has highlighted substantial savings, as you have, for the DDG-51 multiyear procurement program.

I fully intend to recommend multiyear procurements wherever possible. I think we will need the help and assistance of Congress. There are instances where we know we will build multiple ships. We can do it, I think, as Senator Sessions highlighted, more effectively and more efficiently, and with an eye toward the manpower needed to build those ships in that category.

I think the Navy is seriously looking at that for fiscal year 2003 and possibly sooner. I have had some discussions that indicate there may be savings associated with an earlier approval to the multiyear authority, just so people can make smart purchases. I would like to put all those tools in place.

Regarding advanced appropriations, I am still doing some homework on that. I think it is a mechanism that might level the funding if it proves that it has an effectiveness in terms of getting hulls started, if there is confidence that the out-year budgets will sustain

those hulls, and if it does not limit the Navy's flexibility excessively in its budget, I am prepared to recommend that, but I need to do more homework. However, multiyear and some other tools I do feel strongly about. We have seen them work, and where they work, we will apply to the Navy shipbuilding program, and we will look for more tools, because that is my charter from the Secretary.

Senator COLLINS. Admiral, did you want to add anything?

Admiral FALLON. I can only concur with that. The value of advanced appropriation is clearly the jump-start capability, the idea that we have a commitment to get moving and there is something that people can aim for. It seems to me that in all this business the key word is predictability. If we can provide the industry and everybody else associated with this process an expectation that we would be on some kind of glide slope, I think a lot of people would be a lot happier and we would probably end up with some products instead of just a scramble.

Senator COLLINS. Those procurement techniques strike me as being a winner for everyone—for the Navy, for the taxpayers, and for the shipyards. I hope that is something that this committee can work with you and the Appropriations Committee to bring about. I want to thank you both for your testimony.

Thank you, Mr. Chairman.

Senator KENNEDY. Thank you.

Just on this, Secretary Young, as you heard, many senators are interested in trying other funding approaches to buy more ships for the same amount of money. The Navy submitted an analysis that indicates the advanced appropriation mechanism by itself does not result in savings or additional cost. I have been informed by my staff in follow-up to questions by Senator Sessions that the Navy submitted a cost analysis that shows estimates of alternative approaches. That analysis indicated that by applying advance appropriations to a notional 10-year shipbuilding program for 72 ships that already includes multiyear procurement, we would perhaps save \$100 million on a total expenditure of \$97 billion.

Now, while we should certainly consider any ways of saving resources, such a difference would not appear to be significant statistically. With just slightly more than one-tenth of 1 percent, it would not be significant in helping to make up the difference between a 300-ship goal and the 241-ship fleet size that was implied in last year's 5-year shipbuilding plan.

I do not know whether you have studied it, and we all are interested in what conclusions you have reached.

Mr. YOUNG. I am familiar with the analysis you highlighted. I would agree in terms of that amount of savings might not be worth the flexibility loss to the Navy. I would like to have a chance to comb through those numbers more carefully and make sure I understand all the assumptions behind them. Again, if the tool proves effective, I think the Navy would like to use it. But there are downsides to it in terms of limited flexibility, and that analysis did not suggest it is a strong candidate vis-a-vis multiyear, which we know and that analysis suggests, is a very strong candidate.

Senator KENNEDY. I agree with that.

Senator SESSIONS. Senator Kennedy, I appreciate your asking that question, because those were interesting numbers. How do you

square that with the estimate that you have a 20 percent reduction in cost of DD-51 by advanced procurement? Is that apples and oranges we are talking about?

Mr. YOUNG. I think the cost-savings on DDG-51 were because of the multiyear contract and not through an advanced appropriations process.

Senator SESSIONS. So, the report would indicate that we may be overestimating the advantages of advanced appropriations, but not the multiyear contract?

Mr. YOUNG. In that particular analysis I think that would be a fair conclusion, sir.

Senator KENNEDY. I think we have seen in the purchase of the aircraft carrier, too, some different outlay schedules. I think we attempted to save \$600 million over the last aircraft carrier, I am not familiar with the final figure, but this is an issue that has been out there. There has been a willingness of the committee to take a hard look at it, and I think we need to continue to review it.

It seems to me that in some circumstances, there may be a different way of proceeding than you would in purchasing other ships. Certain ships, like aircraft carriers, are going to use somewhat different systems than are used in others. Obviously, because of the contracts and the way those are constructed, you might have a different way. I am interested in hearing from you.

Admiral, did you have a response?

Admiral FALLON. The only thing I might add is that there is no magic here. You cannot say, "do this and we will automatically save X percent of money." I think the advantages are, in my mind, that it offers the potential to jump-start the program more than one hull at one time, and that it gives people the expectation that once started, we are going to follow this through to completion.

Then we can get back to the business of having some predictability in the program. If I were in the industry and I knew that we were starting five hulls of a certain type, when I went to my suppliers I would think that I would be able to have much more confidence in my cost estimates, which I hope would feed back into some savings for us.

But there is no magic here. We are just trying to do something to come up with an idea to get started so that we can arrest the glide slope we are on right now and start putting more hulls into the fleet.

Senator KENNEDY. Secretary Young, the administration's draft plans for expanding the intercontinental range ballistic missile defense includes looking at the sea-based systems. Navy seems split over the matter, some advocating a greater Navy role in national missile defense, Navy area defense, and the Navy theater-wide defense programs. Others are concerned over the impact the new mission would have on the ships available to the fleet for the conventional mission.

I would be interested, both Secretary Young and Admiral Fallon, in what your views are on the impact of using the Navy's ships for the intercontinental range ballistic missile defense. What effect it would have on existing ships for existing missions?

Admiral FALLON. Senator, I will take a shot at that one. I think great potential exists in programs that are in the fleet right now,

and those that are under development add to our knowledge base and potentially provide some operational components of a missile defense program.

Simply put, we do not have the answer. We do not have a program in the Navy that will solve this problem, but we think that the amount of effort that has gone into our missile defense in the area and theater aspects to date would be a good step into the future. As this program expands, we are ready to step up to the plate and provide our experience and knowledge to date and stand by to see how we can help solve the bigger problem.

Senator KENNEDY. In the short term, how would the Navy propose to meet the forward-deployed commitments and assume any missions without breaking the OPTEMPO guidelines?

Admiral FALLON. I do not think there is a magic answer to that one. It depends on the system and how it was conceived and operationally implemented. One would have to take a look and see how we would apply the assets. If there were a desire to have a permanent commitment in some area that we do not have assets regularly forward-deployed, it would seem to me that that would likely entail some need for additional assets. If it happens to be an area where we regularly deploy, we could probably meet those requirements with existing assets, assuming they are modified.

Senator KENNEDY. What are they planning now, as you understand, for the next year?

Admiral FALLON. I believe the plans are not detailed enough to allow us to take those and turn them into something that is concrete in the deployment schedule.

Senator KENNEDY. All right. I have no further questions.

Senator SESSIONS. I just have one line of questions. In advanced and multiyear ship procurement the goal is to plan for the future to be absolutely rigorous in what we know we have to have so that we can procure that in a time frame that best serves the taxpayer. Obviously, there is not much margin for error in our budget.

With regard to our future decisions about what ships we need, the CNO has established a three-star Admiral position as a focal point for determining the Navy warfare requirements. The Marine Corps has just announced that they are not using Navy ships or Air Force strategic lift, but instead are leasing a trimaran to transport marines on an exercise in the Pacific.

The Chief of Naval Research announced that he was ready to go on contract to build one or more ships under a plan of transformation and/or force protection. However, the GAO report on the Navy transformation concluded, "the Navy has devoted little of its experimentation effort to exploring long-term force structure and operational issues such as new ship design and concepts."

As I look at our immediate future, I see many ship design issues that need to be addressed. Frankly, I do not know any of the current or planned Navy efforts to collect the type of information that will be needed to help the Navy make those decisions, yet the Navy is announcing intentions to embark on shipbuilding programs.

Admiral Fallon, the question is are the ships in the budget request the right ships for the Navy in the future, including amphibious lift? Has the requirement for the ship that the press indicates the Chief of Naval Research wants to build been vetted through the

Navy's new requirements organization? If so, how did it compare with future submarine, and unmanned aircraft and alternative sensors? Would the Office of Naval Research vessel provide the Navy the pressing ship design information it would need for designing future ships that might come up?

Admiral FALLON. Sir, thank you. If I could, let me start with the warfare requirements business, with the newly created N7. The N7, Adm. Denny McGinn works very closely with all the folks you mentioned, both with the marines and General Whitlow and his gang in Marine Headquarters, as well as with the Chief of Naval Research, Admiral Cohen. In fact, on one of these topics that you questioned, the issue of what Admiral Cohen has been referring to as littoral combat craft, they had a lengthy discussion yesterday involving all the people involved in it.

Regarding the ships and the appropriateness of the ships we have in the plan today to accomplish today's missions, we believe that these do represent the best blend of technology and capability, as we see the future, given what we have at hand, and an ability to put that into a craft that we can put to sea to meet the missions.

The ships that we are building are going to be around for quite a while. It takes a long time to design them, and they are going to be here for a while, so we attempt to build into them the redundancy to be able to handle not only the countermissions, but anticipating some change down the road. So the answer is succinctly, yes.

Are we satisfied that we have the answer and think we can lock the door and go to sleep for some-time? Absolutely not. We are always interested in new ideas. For example, the marines, as you indicated, did lease a multi-hulled vessel to bring troops to an exercise commitment in the Far East. In fact, we were very interested in these craft and we have a plan to use one of these craft in an experiment later on this year. We look forward to that.

We also are aware that this is not a magic answer. While these ships have aspects such as high speed that are very attractive, they have other aspects that are not as attractive in terms of their ability to take damage and so forth. I think the Chief of Naval Research is absolutely on the right track as he examines new ideas in both hull forms, propulsion systems, and adapting technologies that are out there to develop and experiment.

These things are not ready, we do not believe, for prime time right now, but some of them have an awful lot of promise. I think he has the right idea. That is why he has put up some money and we have asked for additional moneys to continue the research and development effort in these areas, so we can see what these capabilities really are, what their shortcomings might be, and see how they might be adapted to meet those mission tasks we have to perform right now.

There are a lot of ideas out there.

Senator SESSIONS. I agree with that in general, but this three-star Admiral position that has been created, will the Chief of Naval Research be accountable?

Admiral FALLON. They work very closely. They are in sync. We believe they are in sync, and they both work for the CNO through me, and I have them under my sights and keep them to the task.

Senator SESSIONS. How do you respond to the GAO report that says the Navy has devoted little experimentation effort in exploring long-term force structure and operational issues such as new ship design concepts? Do you think we need to do more there?

Admiral FALLON. I think if we had unlimited resources we would be doing something in every corner of the world.

Senator SESSIONS. Well, with limited resources, sometimes making the decision on design is even more critical.

Admiral FALLON. I understand, and I am not trying to be flip-pant. We are very interested in new technologies, and particularly interested in making sure that we can develop new technologies that we think match our missions.

For example, there are countries that have some very interesting stuff under construction, and in a few cases actually in existence in their fleet. The missions some of these countries have in mind for these vessels are in some cases very different than the missions we have to undertake.

Particularly, I have in mind a couple of nations that have highly maneuverable, fast craft that are designed to work in in-shore waters in a defensive mode. We are very interested in craft that can fit in with our concepts of operation, which is to not be defending our shores, but if we have a problem, to be able to work in far-away waters. That means we have to get our craft there. We have to make sure they can be sustained for long periods of time.

So there are some tradeoffs. Some of these really interesting and novel technologies do not have, as we now understand it, the kind of legs and endurance and capabilities that we envision. That is not a reason for us to throw them out, but we want to see and learn all we can, so we are very interested. I think we are committed to looking to the future and trying to adapt these things.

Senator SESSIONS. Thank you. Mr. Chairman.

Senator KENNEDY. It might be interesting sometime, if we get the time, to spend an hour or so hearing about those different technologies. I will talk to Senator Sessions. There never seems to be enough time around here, but I would be interested.

Admiral FALLON. Senator, I would be delighted.

Senator Kennedy, could I go back on one question you asked earlier, the one on the DD 21. It is our desire to continue to develop the technologies that we think are going to be inherent in this platform, new technologies that will advance us not only in our war-fighting capabilities but in our long-term maintenance and hopefully crew reduction. One of the aspects of that that is really critical as we continue the research and development effort, notwithstanding the fact that we have delayed the source selection, is that we still think there is a critical need to keep the research and development money going so that we can this year not have a break in that effort to get as much as we can in these areas.

Senator KENNEDY. Thank you very much. It has been a very helpful hearing. The subcommittee is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR MARY LANDRIEU

LOW SHIPBUILDING RATE

1. Senator LANDRIEU. Secretary Young, earlier this year, we heard testimony from the heads of America's major shipyards. Each one of them indicated that the single factor which most impacts them and the ultimate cost to the taxpayer is *stability*. The statistics don't lie. For a variety of reasons, there has been little to no stability in Navy shipbuilding programs for a long time, and sail-away costs have gone up as a result. Of even greater concern is the fact that we're not building ships at a rate necessary to keep the Navy at a level every study in the world says is necessary. Can you describe how you plan to get the Navy shipbuilding program back on track?

Mr. YOUNG. The most significant way that I can affect the Navy's shipbuilding program is to control the costs of our existing programs and ensure that the budget requests for future programs are adequately resourced for the risks presented in a low rate procurement shipbuilding environment.

Many factors contributed to the cost growth of current ships under contract, including:

- Low rate procurement of vendor material and Government furnished equipment;
- Configuration changes;
- Budget reductions/rescissions;
- Unanticipated challenges with the design and production of lead ships;
- Unanticipated growth in shipyard labor rates; and
- Inflation and fiscal constraints.

All of these factors, but particularly fiscal constraints, cause the Department to budget procurement programs tightly. The consequences of these factors are that any cost growth or budget reduction causes immediate resource execution issues. To prevent further increases to the cost of the Navy's future shipbuilding needs and mitigate the impact of these cost drivers, the Navy is pursuing the following corrective actions:

- Remedy the systemic issues within our control and incentivize industry partners to do the same.
- Ensure that estimating and budgetary processes better reflect the cost of risk factors beyond our control.

2. Senator LANDRIEU. Secretary Young, why doesn't the fiscal year 2002 budget ask for at least the nine ships necessary to ensure we don't fall farther behind?

Mr. YOUNG. The Navy agrees that procurement rates of 8–10 ships per year are needed to sustain the current fleet size over the long-term. However, the Navy's "topline" budget authority is constrained. The fiscal year 2002 request for six ships provided the best balance between the Department's competing requirements and available resources.

3. Senator LANDRIEU. Secretary Young, what is your best estimate for the required ship building rates on major Navy SCN programs to maintain the industrial base, if that rate were guaranteed for the next 5 or 10 years? What was your estimate based on?

Mr. YOUNG. Procurement rates of 8–10 ships per year are needed to sustain the current fleet size over the long term. The industrial base required to sustain the present fleet size would also be 8–10 ships per year. Continuing to procure six ships per year as reflected in the fiscal year 2002 budget will have negative effects on fleet force structure and the shipbuilding industrial base. Our estimate is based on a ship build rate of 8–10 ships per year which is required to sustain a fleet size of 316 ships.

LPD-17 PROGRAM/ILLION STATUS

4. Senator LANDRIEU. Admiral Fallon, the Department of the Navy is constructing 12 replacement amphibious transport docks of the *San Antonio*-class (LPD-17) as the functional replacement for 41 aging ships of the LPD-4, LKA-113, LSD-36, and LST-1179 classes. The LPD-17 is being acquired by making extensive use of integrated data environment and product data model techniques across major shipbuilding companies. The lead ship of the class will deliver to the Navy in November 2004. What is the status of the LPD-17 program and what is your assessment as to Northrop Grumman's ability to maintain the construction schedule?

Admiral FALLON. Lead ship detail design is approximately 89 percent complete. Detail design includes the effort associated with developing the 3-D product model. Production design is approximately 65 percent complete. Production design includes development of 2-D drawings and numerical controlled machining data tapes. Lead ship construction has commenced on 98 (of 210 total) units with the focus of construction on initial unit fabrication. Overall, production on the lead ship is estimated at approximately 6 percent complete.

The LPD-17 schedule established by the Alliance in February 2001 revised lead ship delivery to November 2004. Insofar as the Alliance is currently completing detail and production design and lead ship construction is approximately 6 percent complete, a fair degree of risk remains in execution of this schedule. However, given the schedule is based on realistic performance projections by the Alliance, the Navy assesses the Alliance as well capable of maintaining this construction schedule.

5. Senator LANDRIEU. Admiral Fallon, do you see any potential for additional cost savings through either advance procurement or multiyear buys of additional LPD-17 hulls?

Admiral FALLON. The current LPD-17 program funding profile utilizes 2 years (increments) of advanced procurement (AP) followed by full funding in the year of authorization for each ship. This funding plan phases anticipated obligation requirements to build these ships in accordance with efficient construction schedules at the respective shipyards. For LPD-21 and LPD-22, increment one of AP was appropriated in the Fiscal Year 2001 Defense Appropriations Act. The fiscal year 2002 President's budget requested the second increment of AP funds to meet anticipated obligation requirements in fiscal year 2002. Additional AP funding (beyond that requested in the fiscal year 2002 President's budget) would not result in cost savings because any additional funds would not require obligation until fiscal year 2003. Alternative funding mechanisms such as multiyear procurement can, and do, reduce risk and save money on Navy shipbuilding programs. For technically mature systems, where the Department has a high degree of confidence in contractor performance, stable requirements, and sufficient funding, multiyear procurements can produce savings. Considering where LPD-17 is in the acquisition process, however, multiyear procurement is not considered a viable acquisition strategy. The Navy will continue to assess the feasibility of multiyear procurement as well as other procurement strategies in determining the most cost effective method for procuring future ships.

6. Senator LANDRIEU. Admiral Fallon, do you believe any technology and capital investments made for the LPD-17 program can be leveraged to produce cost savings in the Joint Command and Control Ship (JCC) program?

Admiral FALLON. The JCC(X) program will use lessons learned from various commercial and DOD major acquisition programs, including the LPD-17, DD 21, CVN(X), and T-AKE, to devise a cost-effective acquisition strategy. The Navy is also actively engaging industry for innovative ideas based on previous commercial and military shipbuilding programs to reduce JCC(X) acquisition and life cycle support costs. We will leverage LPD-17 technology and capital investments for JCC(X) accordingly.

MULTIYEAR PURCHASING AND ADVANCE PROCUREMENT

7. Senator LANDRIEU. Secretary Young, when the heads of the shipyards testified, they unanimously agreed that multiyear purchasing and/or advance procurement could deliver tremendous savings to the government. As examples, they mentioned the C-17 program and the gains made during construction of the CG-47 *Ticonderoga*-class of ships. Do you believe there are cost savings to be gained through some sort of multiyear procurement?

Mr. YOUNG. Alternative funding mechanisms can, and do, reduce risk and save money on Navy shipbuilding programs. For technically mature systems, where the Department has a high degree of confidence in contractor performance, stable requirements, and sufficient funding, multiyear procurements can produce savings. Use of Economic Order Quantity procurements for large lots of shipbuilder material and major equipment will also generate savings. Use of advanced procurement combined with advanced construction funds provides the flexibility to accommodate program changes in current year budgets while not tying up the total required to fully fund the ship in the first year. This strategy needs to reflect the phased construction requirement for materials, labor, and government furnished equipment in order to avoid construction delay. Evenly funding construction does not appear to provide

any cost advantage to the government or the contractor due to the nature of ship construction.

8. Senator LANDRIEU. Secretary Young, what approach do you believe would be most effective and does the Department intend to ask Congress to authorize it?

Mr. YOUNG. The funding mechanism of choice will depend on the particular program and its level of design maturity and stability. Since each program is different, no single method will work for all shipbuilding programs. The Navy plans to review the status of each program and make specific recommendations to Congress on the appropriate funding mechanism to maximize cost savings. The Navy has and continues to recommend the use of multiyear procurement (MYP) contracting for the DDG-51 class destroyer program. The fiscal year 1998-2001 MYP has proven very effective in increasing the number of hulls purchased for a fixed shipbuilding budget when compared to a traditional contract with separately priced options for subsequent ship appropriations. With the continued support of Congress, the Navy intends to continue this strategy for the fiscal year 2002-2004 DDG-51 procurement. The Navy is also actively investigating the feasibility of a MYP for the *Virginia*-class submarine program.

QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

SHIP CONSTRUCTION REQUIREMENTS

9. Senator SESSIONS. Admiral Fallon, has the requirement for the ship, that the press reports indicate that the Chief of Naval Research says he wants to build, been vetted through the Navy's new requirements organization and, if so, how did it compare with future submarine and unmanned aircraft alternative sensors? Would the Office of Naval Research vessel provide the Navy the pressing ship design information it would need to for making decisions on future ships such as LH(X), the future amphibious ship, Maritime Prepositioned Force (future) ships which has research funding on the unfunded requirements list, and the new oiler which also is on the CNO's unfunded research requirements list?

Admiral FALLON. The requirements for the Littoral Surface Craft-Experimental, LSC(X), have not been formally vetted through the Deputy Chief of Naval Operations Warfare Requirements and Programs, N7, organization. Discussions between the Office of Naval Research (ONR), and N7 have been initiated in order to validate the mission characteristics of the LSC(X) experimental craft with potential future warfighting requirements. The LSC(X) program is not intended to and will not provide ship design information for LH(X), MPF(F), or a new oiler. The focus of the LSC(X) program is to support future force formulation and concept of operations experimentation.

IMPACT OF DELAYING THE DD 21 DOWN-SELECT

10. Senator SESSIONS. Secretary Young, the Navy was scheduled to down select to one DD 21 design last March. After announcing one delay to gather additional information, the Navy pulled the plug on requesting final offers from the two DD 21 teams. The effect of this delay on DD 21, the impact of the delay on other programs, and the plan to move forward have never been explained by the Navy. The CNO's unfunded requirements list requests an additional \$16 million for CVN-77 to support a contract signed on January 1, 2001. What is the requirement for the \$16 million and if the contract were signed on January 1, 2001, why wasn't the \$16 million included in the fiscal year 2002 amended budget request?

Mr. YOUNG. The CVN-77 acquisition strategy being used to procure the new Integrated Warfare System (IWS) requires RDT&E funding to plan and execute the IWS conceptual design. Notional IWS annual RDT&E funding requirements, finalized in the contract awarded to Newport News Shipbuilding (NNS) on 26 January 2001, were based on the projected IWS work scope, terms, and conditions as known at that time. However, out of necessity, final validation of these notional annual funding requirements had to be deferred until after NNS came to terms with Lockheed Martin, the CVN-77 Electronic Systems Integrator, on 19 March 2001. In April 2001, NNS advised the Navy that while the total amount of contract funding for IWS efforts appeared to be sufficient, \$16 million would need to be pulled forward to fiscal year 2002 in order to fully conduct the technical analyses necessary to define system alternatives, develop segment requirements documents and software development documents, develop interface requirements specifications, support system/program reviews, and implement the system engineering and specialty engi-

neering processes essential for IWS development. It should be noted that this \$16 million is not related to any down-select delays or other events within the DD 21 program.

The fiscal year 2002 amended President's budget request contains combined future carrier design funding for both the CVN-77 IWS as well as CVNX contract design efforts. Due to existing budget constraints within both programs, this emergent requirement for the re-phasing of \$16 million RDT&E, could not be provided within existing resources, and was therefore placed on the CNO's fiscal year 2002 unfunded priority list.

11. Senator SESSIONS. Secretary Young, would \$16 million fulfill all of the CVN-77 fiscal year 2002 obligations, or is there another bill to come?

Mr. YOUNG. While the CNO's \$16 million request is not related to the delay of the DD 21 down select, there has been an impact to the CVN-77 IWS as a result. The down-select delay has negatively impacted development of the Volume Search Radar (VSR) that, together with the Multi-Function Radar (MFR), is the cornerstone of the new CVN-77 IWS. The design of the VSR is an integral part of the DD 21 competitive acquisition strategy, and the competing Blue/Gold DD 21 contractors have each proposed different VSR options. The DD 21 down-select delay has also delayed VSR down-select, requiring that a CVN-77 island contract data package be developed for each proposed VSR solution to ensure IWS schedule alignment with the basic ship detailed design and construction schedule is maintained until a down-select occurs.

The CNO's commitment to pursue VSR integration into the CVN-77 IWS design requires an additional \$15 million in RDT&E funding: \$4.3 million in fiscal year 2001 and \$10.7 million in fiscal year 2002. The \$4.3 million fiscal year 2001 requirement is now being addressed by internal Navy reprogramming actions. The \$10.7 million fiscal year 2002 VSR requirement is presently unfunded but has been presented to professional staff members during fiscal year 2002 budget hearings as a significant outstanding funding issue.

12. Senator SESSIONS. Secretary Young, what programs are affected by the delay in making the DD 21 down select and please include DD 21 major sub-systems with the most schedule risk, the additional cost to the government due to the delay, and how those programs are affected?

Mr. YOUNG. The Navy's decision to temporarily hold the DD 21 down-select in abeyance pending completion of the Defense strategy reviews is expected to impact the program cost and schedule in relation to the length of the delay. In order to minimize the impact of that decision, the Navy has extended the Phase II contract period of performance to continue development of key technologies, such as the Advanced Gun System, Integrated Power System, shared apertures, software, manning reduction initiatives, and radar suite development. By continuing the development of the most critical technologies for DD 21, the Navy believes that it will minimize the effect on the ship construction schedule.

AIRCRAFT CARRIER REFUELING OVERHAUL

13. Senator SESSIONS. Secretary Young and Admiral Fallon, the amended budget request includes \$820.7 million for CVN-69 refueling overhaul. That was supposed to be the final increment of \$2.2 billion funding for the overhaul. However, one of the items on the CNO's list of fiscal year 2002 requirements that is not funded in the amended budget is \$87 million for the CVN-69 refueling overhaul.

Given that your budget request is supposed to be fully funded for the items in the request, why is there an unfunded requirement for the CVN-69 overhaul, which states that failure to fund the additional \$87 million "will result in redelivering a non-mission ready ship?" Additionally, what is the cause of the price increase for the overhaul?

Mr. YOUNG. The \$87 million in question can be broken down into two segments:

a. The first part, equaling \$30 million, is required to pay for an emergent requirement to replace copper service steam piping for hotel services. This fleet-wide safety issue came to light near the end of contract negotiations, and was subsequently funded through PBD No. 821 in June 2001. When this funding was obtained, the shortfall amount on the fiscal year 2002 CNO's unfunded requirements list should have been amended to read \$57 million.

b. The second portion, equaling \$57 million, represents the cost of work that had to be descope during contract negotiations that were finalized after the fiscal year 2002 budget was submitted. This descope work consists of enhancements to ship-

board equipment, habitability items, auxiliaries upgrades, outfitting, and furnishings, none of which directly impact combat readiness. The most cost-effective opportunity to complete the descoped work is during the RCOH. If that is not possible due to insufficient funding in the RCOH, the work will be transferred to OPN and fleet maintenance accounts for completion during the Post Shakedown Availability/Selective Restricted Availability (PSA/SRA) or subsequent availabilities. In this instance the work would compete for resourcing among other fleet priorities.

SHIPBUILDING REPORT REVIEW

14. Senator SESSIONS. Secretary Young and Admiral Fallon, the Navy is participating in a shipbuilding review directed by the Secretary of Defense. The results of the review could have a major impact on the requirements for the ships and the recapitalization rate, depending on which press report one reads.

We understand that the results are not available, but it would be helpful if you could describe the level of Navy participation, the types of results the review will produce, and any assumptions or scenarios that are being used which would influence the results.

Is there a military strategy and supporting set of operational concepts that the review is using to develop the force structure, or is the group using the 30-year shipbuilding plan as the force structure and then determining options for procuring those ships?

Mr. YOUNG and Admiral FALLON. We will have to refer you to the Department of Defense on the details of the shipbuilding review and the process used to perform it. However, the Navy supported the OSD-led effort with operational and acquisition subject matter experts as required. It is the Navy's understanding that the results of the study will be incorporated as part of the overall QDR.

INDUSTRIAL BASE ISSUES AND IMPACT ON THE COST OF NAVY SHIPS

15. Senator SESSIONS. Secretary Young, as directed by the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, the Navy submitted an update to the DDG-51 industrial base study. Subsequent to submission of the report to Congress, the Navy provided an amendment to the report to the GAO, but has not amended their report to Congress.

Please provide, in answer to this question, the amended DDG-51 industrial base study that includes the same information the Navy provided to the GAO.

Mr. YOUNG. At the request of Senate Armed Service Committee staff, the Secretary of the Navy forwarded the additional analysis on the *Arleigh Burke* (DDG-51)-Class Industrial Base Study Report to the four congressional defense committees on August 16, 2001.

16. Senator SESSIONS. Secretary Young, in addition, what are the Navy's basic conclusions regarding the destroyer industrial base and how will those conclusions affect the future costs of ships?

Mr. YOUNG. In the November 2000 report to Congress updating the 1993 *Arleigh Burke* Destroyer Industrial Base Study, the Navy concluded that both of the destroyer shipbuilders will have to book unprecedented amounts of additional, non-U.S. Navy work in order to maintain their workforces during the transition from DDG-51 to DD 21 production. The report assessment was based on the shipbuilding profile represented in the fiscal year 2001 budget submission. However, the cumulative effect of actions taken in the fiscal year 2002 budget request including the acceleration of the 58th DDG-51 class ship to fiscal year 2002, coupled with congressional action on the LPD-17 program in fiscal year 2001 and the Navy's action in the fiscal year 2002 President's budget, make the industrial base forecast even more challenging than reflected in the report.

If the surface combatant shipbuilding profile analyzed in the November 2000 Report to Congress came to fruition, there would be a high probability that the unit costs of future surface combatants and other ships constructed at those shipyards would increase due to the reduced overhead base and inefficiencies caused by low throughput.

17. Senator SESSIONS. Secretary Young, one driver of the cost increases in ship contracts that have already been signed, is the price increase charged by sole source vendors of materials and equipment. What type of system does the Navy have to track and then predict the impact of the reduced industrial base on the cost of Navy

ships, including the impact of sole source vendors on the shipyard's contracting for materials and equipment?

Mr. YOUNG. The Navy closely monitors the shipbuilding industry workforce and the impact current and projected workload changes have on the cost of Navy ships and equipment. The Navy collects monthly shipyard employment levels, and uses analytical models to predict future employment levels based on Navy ship procurement plans. On mature programs, the Navy has an extensive database of historical material related to equipment costs at various annual procurement rates, which is used to predict future costs. Issues with sole source vendors and diminishing manufacturing sources are identified through annual surveys and regular communications with prime contractors. When a potential vendor problem is identified, the Navy seeks to ensure a technically and fiscally feasible solution is obtained.

SHIPBUILDING REVIEW

18. Senator SESSIONS. Secretary Young, what is the process and Navy participation in the shipbuilding review that is ongoing by the Office of the Secretary of Defense?

Mr. YOUNG. I will have to refer you to the Department of Defense on the details of the shipbuilding review and the process used to perform it. However, the Navy supported the OSD-led effort with operational and acquisition subject matter experts as required. It is the Navy's understanding that the results of the study will be incorporated as part of the overall QDR.

INDUSTRIAL BASE

19. Senator SESSIONS. Secretary Young, what are the industrial base issues and capability tradeoffs associated with the fiscal year 2002 budget request and pending ship acquisition contracts?

Mr. YOUNG. Continuing to procure six ships per year as reflected in the fiscal year 2002 budget request will have three negative effects. First, it will create a "bow wave" of future shipbuilding procurement requirements, for which it will be increasingly difficult to allocate scarce procurement account resources. Second, it will create additional stress on fleet maintenance budgets to sustain the service lives of aging and increasingly obsolescent ships to maintain force structure. Third, the lower shipbuilding rates of this year's budget request and the increased shipbuilding rates in future years will create a layoff-hiring cycle within the shipbuilding industry which will result in increased cost to the Government for future ship construction. This will exacerbate the previously mentioned procurement and maintenance affordability problem and causes further stress to the "top line" of future Navy budgets.

Our shipbuilding plan is adequate to sustain the remaining naval shipbuilding industrial base including the suppliers that provide supporting equipment and associated engineering services. Our plan provides the best available balance between the Department's requirements and available resources. The innovative teaming strategy approved by Congress for the construction of four *Virginia*-class submarines, advance procurement for the fiscal year 2002 and fiscal year 2003 *Virginia*-class submarines, and the next DDG-51 multiyear procurement contract all highlight acquisition strategies aimed at lowering costs, reducing disruptions from hiring and layoff cycles while level loading employment, and encouraging capital investments. Our shipbuilding plan maintains the LPD-17 program and the Auxiliary Cargo and Ammunition Ship (T-AKE) program that will help the auxiliary vessel manufacturers capitalize on past and current program efficiencies. These actions constitute the Navy's near-term effort to ensure the long-term ability of the shipbuilding industry to support our future construction programs.

20. Senator SESSIONS. Secretary Young, what funding alternatives will lower the unit cost of ships and are those alternatives included in this budget request?

Mr. YOUNG. The Department of the Navy considered three alternative funding mechanisms for use in the fiscal year 2002 budget request: Multiyear Procurement (MYP), Economic Order Quantity (EOQ), and Advanced Appropriations.

Both MYP and EOQ cost savings are included in the DDG-51 budget request. DDG-51 pricing is based on a six-ship fiscal year 2002-2004 MYP. Advance procurement (AP) funding in fiscal year 2001 is used to achieve shipbuilder material cost savings from EOQ buys. Use of MYP is also being considered for the *Virginia* (SSN-774)-class. However, no MYP or EOQ savings are included for the *Virginia*-class in the fiscal year 2002 budget request.

Consistent with OMB circular A-11, the Department of the Navy believes advanced appropriations could be used for shipbuilding beginning in fiscal year 2002. The Department of the Navy believes such a course would be appropriate if it were employed to facilitate the cost-effectiveness of the construction and modernization of U.S. naval ships and sustain stable and economic shipbuilding rates within the U.S. shipbuilding industry. The strengths and weaknesses of using advanced appropriations are addressed in detail in the Department of the Navy analysis of shipbuilding funding alternatives forwarded to the Seapower Subcommittee on 15 June 2001. In summary, the analysis concludes that the advanced appropriation funding mechanism by itself does not result in savings or in additional costs, and advanced appropriation funding is not included in the Department of the Navy fiscal year 2002 budget request.

SHIPBUILDING COST DRIVERS

21. Senator SESSIONS. Secretary Young, does the Navy understand the shipbuilding cost drivers and is there a plan to mitigate the impact of those drivers on the cost of Navy ships?

Secretary YOUNG. Many factors have contributed to the cost growth of current ships under contract, including:

- Low rate procurement of vendor material and Government furnished equipment;
- Configuration changes;
- Budget reductions/rescissions;
- Unanticipated challenges with the design and production of lead ships;
- Unanticipated growth in shipyard labor rates; and
- Inflation and fiscal constraints.

All of these factors, but particularly fiscal constraints, cause the Department to budget procurement programs tightly. The consequences of these factors are that any cost growth or budget reduction causes immediate resource execution issues. To prevent further increases to the cost of the Navy's future shipbuilding needs and mitigate the impact of these cost drivers, the Navy is pursuing the following corrective actions:

- Remedy the systemic issues within our control and incentivize industry partners to do the same.
- Ensure that estimating and budgetary processes better identify and reflect the cost of risk factors beyond our control.

SHIPBUILDING

22. Senator SESSIONS. Admiral Fallon, is the Navy buying the right types of ships for future requirements?

Admiral FALLON. Yes, the ships in the budget are the right ones. Although insufficient to sustain a 310-ship battle force, the Navy's shipbuilding plan provides needed ships and capabilities to the fleet while remaining within a constrained topline.

23. Senator SESSIONS. Secretary Young, is the research and development request for future ships based on a disciplined requirements process which includes the Joint Requirements Oversight Council?

Mr. YOUNG. Yes, Navy requests for research and development funds required for the development of future ships are based upon requirements that are approved by the Joint Requirements Oversight Council. The Navy prepares Operational Requirements Documents (ORDs), which define the needed capabilities of future ships. ORDs are circulated for review and submitted to the Joint Requirements Oversight Council for approval. Approved ORDs are required during periodic milestone reviews of future ship programs.

QUESTION SUBMITTED BY SENATOR BOB SMITH

PRIOR NOTICE FOR ACCESS TO PORTS

24. Senator SMITH. Admiral Fallon, this is not a shipbuilding issue, but a safety issue. A week ago, an article in the *Washington Times* mentioned that Russia is using its commercial fleet to spy on sensitive U.S. defense facilities, including our nuclear submarines in the Pacific Northwest. It also said a recent maritime agreement signed with Russia undercuts our efforts to require advance arrival notice of

Russian vessels at several militarily sensitive U.S. ports. Can you assure me something is being done about this? Have we turned Puget Sound into an open port for Russian vessels engaged in espionage?

Admiral FALLON. There is nothing new about port notification requirements in the Puget Sound area of the country. For the last 10 years, since the break-up of the former Soviet Union, the Russians have been allowed access to ports in the Puget Sound area of Washington State on the same basis as virtually all other friendly nations which visit our 361 ports. (We do not allow nations which support terrorist activities access to any U.S. ports.) The requirement is for all nations, including Russia, to provide a standard 24-hour advance notification of arrival to the Coast Guard Captain of the port. This arrangement promotes trade in this vital maritime section of the nation. The Department of Defense believes it has appropriate security measures in place to protect U.S. forces and interests here. Within the last several months, the U.S. Transportation Department has negotiated an agreement to facilitate trade with Russia. The Department of Defense has concurred in its development and signing. Suffice it to say, we believe we have in place appropriate safeguards to protect U.S. interests and the security of American military forces in port locations.

[Whereupon, at 4:20 p.m., the subcommittee adjourned.]

