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**ACQUISITION AND DEVELOPMENT  
CHALLENGES ASSOCIATED WITH  
THE LITTORAL COMBAT SHIP**

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HEARING

BEFORE THE

SUBCOMMITTEE ON SEAPOWER AND  
PROJECTION FORCES

OF THE

COMMITTEE ON ARMED SERVICES  
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

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**ACQUISITION AND DEVELOPMENT CHALLENGES  
ASSOCIATED WITH THE LITTORAL COMBAT SHIP**

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HOUSE OF REPRESENTATIVES,  
COMMITTEE ON ARMED SERVICES,  
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES,  
*Washington, DC, Thursday, July 25, 2013.*

The subcommittee met, pursuant to call, at 9:30 a.m., in room 2212, Rayburn House Office Building, Hon. J. Randy Forbes (chairman of the subcommittee) presiding.

**OPENING STATEMENT OF HON. J. RANDY FORBES, A REPRESENTATIVE FROM VIRGINIA, CHAIRMAN, SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES**

Mr. FORBES. I want to welcome all our Members and our distinguished panel of experts to today's hearing that will focus on the acquisition and development challenges associated with the Littoral Combat Ship [LCS].

Concurrent with our hearing this morning, the Government Accountability Office [GAO] released a report entitled "Significant Investments in the Littoral Combat Ship Continue Amid Substantial Unknowns about Capabilities, Use and Cost." In this report GAO expresses concern about the design stability of the platform and concern about the program goals of the mission modules. Until these issues are clarified, GAO has recommended Congress consider restricting future funding to the program for the construction of additional seaframes until certain conditions are met.

This is not the first time that we have received reports critical of the LCS program. The Perez report was a report commissioned by the Vice Chief of Naval Operations to assess and review the Navy readiness to receive, employ, and deploy the Littoral Combat Ship. This report, conducted in early 2012, was also critical of the LCS program both in terms of concepts and implementation. Specific concerns included in this report include the concept of operations, manning, maintenance, modularity, mission package capability, training, and commonality were identified.

The Director, Operational Testing and Evaluation [DOT&E] has also expressed concerns about the survivability of the Littoral Combat Ship and indicated that LCS 1 is not expected to be survivable in combat, and unable to maintain mission capability after taking a significant hit in a hostile combat environment. The testing program associated with this first class is also lagging.

I would be remiss if I did not mention the engineering casualties that LCS 1 is encountering during the deployment to Singapore. While expected in the first class, the sheer number of casualties associated with LCS 1 is troubling and needs to be quickly addressed.

At a time of reducing resources, the Navy is planning to even more heavily rely on this lower cost alternative. I believe it is incumbent on this subcommittee to ensure that we have the most capable lower cost alternative that is relevant to the combatant commanders in time of conflict.

I also believe that criticism of the LCS program is warranted. From this most recent GAO report to the Perez report, and even DOT&E assessment, they all provide an alternative view as to how to best manage the acquisition and development of this effort. But let me emphasize that none of these reports disputes the necessity to rapidly field the capabilities proposed by the Littoral Combat Ship, and I look forward to doing my part to make sure that we methodically and expeditiously field the right LCS capability to the fleet in the years ahead.

Today we are honored to have as our witnesses the Assistant Secretary of the Navy for Research, Development, and Acquisition, the Honorable Sean Stackley—Mr. Stackley, thank you for being here and for your dedication to our country; the Director of the Navy Staff and Chairman of the Littoral Combat Ship Council, Vice Admiral Richard Hunt, and, Admiral Hunt, we thank you for your service to this country and for taking time to be with us today; and the Managing Director of Acquisition and Sourcing Management, Government Accountability Office, Mr. Paul Francis. And, Mr. Francis, thank you and your entire team for the good work that they do in bringing these issues forward.

And we thank you all for being here. I couldn't think of a better panel to assist our subcommittee in reviewing this issue, and I hope that at the end of this hearing, that we will be best able to provide a firm direction as to the path forward with the LCS program.

And before I recognize Mr. Courtney, I want to just make one other comment, and it is this: I hear from time to time people saying, well, isn't this really problematic, because we have a difference within the Navy even about the LCS; that we have people that are raising different issues, and they are not on the same sheet of music? And I want to just tell you all I take a totally different view of that. I want to applaud you all for being able to come to the table, having divergent points of view, being willing to really ask the tough questions and put them on the table, and I think that is what makes our Navy so strong and capable is our ability to do that. So I just want to thank you all for your willingness to not come in here in an adversarial role where each person has to put forward their own side, but that we can really ask these tough questions and get answers, because in the end we want the best vessels for our Navy and for the American people, and I want to applaud you all for trying to do that.

And after saying that, it is my privilege now to recognize the acting ranking member, I guess we would say today, or the vice ranking member Mr. Courtney, someone who is very committed to the Navy, and for any remarks that he might have. Mr. Courtney.

[The prepared statement of Mr. Forbes can be found in the Appendix on page 45.]

**STATEMENT OF HON. JOE COURTNEY, A REPRESENTATIVE  
FROM CONNECTICUT, SUBCOMMITTEE ON SEAPOWER AND  
PROJECTION FORCES**

Mr. COURTNEY. Thank you, Mr. Chairman, and thank you for organizing this hearing. And I couldn't agree with you more. We have an outstanding panel here today, who have been here in the past to talk about this issue over the last number of years, and, again, we look forward to an update, particularly in light of the GAO report.

Today the subcommittee meets in open session to hear testimony on the acquisition and development challenges associated with the Littoral Combat Ship. The LCS is a critical element of the Navy's long-term shipbuilding plan and our national security strategy. However, 9 years into the program, many of us on this subcommittee and many of our colleagues in the House have serious questions regarding the LCS concept of operations; its manning, maintenance, and sustainment concepts; and its survivability in a combat environment. Given how critical this platform is to the Navy's ability to meet critical-mission areas in the decades ahead, it is important that we get this right.

Based on the Navy's assurances that its revised acquisition strategy would provide an affordable transformational ship for the future, Congress agreed to funding additional LCS seaframes at the same time that the Navy continued its planned period of experimentation, testing, and evaluation. Now, however, we find a program facing cost growth, schedule delays, and problems with delivering intended capabilities, as GAO noted in their report released today. These issues and others lead us to examine where the program stands now, where it is heading, and what steps all of us here today can do to ensure its success.

The GAO's report that we will discuss today raises several important questions that the Navy and this panel will need to sort out. For instance, is proceeding with procurement of so many seaframes so far ahead of availability of the antisubmarine, mine countermeasure, and surface warfare mission modules the best and most cost-effective approach?

Second, with regards to the GAO's recommendation that Congress halt progress on future ships pending further study and oversight, what impact would such an approach have on existing contracts and ongoing efforts to reduce costs?

Third, is it good fiscal judgment and sea-building practice to continue with the planned purchase of seaframes over the next 2 to 3 fiscal years when design changes that could result from further developmental and operational testing and evaluation could drive up costs?

With regards to recent news from the LCS deployment in Singapore, how should Congress respond to the reliability issues with the *Freedom's* variant diesel engines, which have experienced multiple instances of loss of power during deployments?

Finally, given the expertise and experience of our witnesses today, I hope you can help us put the challenges of this LCS in proper historical context relative to those experienced in other shipbuilding programs in the earlier years. Ultimately this panel will have to make some tough choices in the coming years regarding the

right balance between getting the fleet, the platforms, and capability it so urgently needs, while ensuring that we do all we can as good stewards of our increasingly limited fiscal resources. I look forward to hearing from our witnesses and to a robust discussion of this important program.

Thank you, Mr. Chairman. I yield back.

Mr. FORBES. Thank you, Mr. Courtney.

Just a couple of procedural matters. I ask unanimous consent that nonsubcommittee members, if any, be allowed to participate in today's hearing after all subcommittee members have had an opportunity to ask questions. Is there any objection?

Without objection, nonsubcommittee members will be recognized at the appropriate time for 5 minutes.

I also ask unanimous consent that other committee and noncommittee members be allowed to participate in today's hearing after all subcommittee members have had an opportunity to ask questions. Is there any objection to that?

Without objection, nonsubcommittee members will be recognized at the appropriate times for 5 minutes.

With that, Secretary, we are glad to have you here, and we are going to give you the floor.

Secretary STACKLEY. Mr. Chairman Forbes, Representative Courtney, distinguished members of the subcommittee, thank you for the opportunity to appear before you today alongside Vice Admiral Hunt to address the Littoral Combat Ship program. With the permission of the subcommittee, I propose to provide a brief statement and submit a separate formal statement for the record.

Mr. FORBES. And your written statements of all the witnesses will be made part of the record.

Secretary STACKLEY. Thank you, sir.

In view of the witnesses today, myself and Vice Admiral Hunt, I am going to ask that Vice Admiral Hunt provide his statement first to address the need for LCS in terms of requirements, and I will follow to talk about where we are programmatically and our proposal for the way ahead.

Mr. FORBES. And we are happy to do that. Admiral, as we mentioned at the beginning, we appreciate your service. Thank you for being here, and we would like to turn the floor over to you then right now.

**STATEMENT OF VADM RICHARD W. HUNT, USN, DIRECTOR,  
NAVY STAFF, DEPARTMENT OF DEFENSE**

Admiral HUNT. Thank you, Chairman Forbes.

Mr. FORBES. Admiral, if you could pull that mike just a little bit closer. I know they are kind of tricky sometimes. Make sure it is turned on.

Admiral HUNT. How about this?

Mr. FORBES. That is great.

Admiral HUNT. Chairman Forbes, distinguished members of the subcommittee and other distinguished Members, first of all, I want to thank you for holding this hearing on the Littoral Combat Ship, and I appreciate the opening statements. It is exactly where we want to go is take this to the next level and make sure we have

got the right program for the fleet, and I am personally confident that we do.

In my years in the Navy, I have had the honor of serving as a numbered fleet commander. I was the 3rd Fleet commander that took delivery of USS *Freedom* several years ago. I have been the Surface Force Type commander, which is responsible for man training and equipment of all of our surface Navy ships. I have had command of a frigate; I have had command of a cruiser; a strike group command. But perhaps most insightful for the hearing that we are having today is I was a precommissioning engineer on USS *Underwood*, FFG-36, and lived the life of introducing a new ship class to the fleet with the challenges that that brings.

I think really the grouping of those past experiences give me a kind of a unique perspective to address the topic that we are looking at today.

The Littoral Combat Ship provides our Navy with vitally important capabilities and is key to the future of all naval operations. LCS, with its speed, shallow draft, and persistence, coupled with the modular architecture, offers the ability to operate in the inshore environment and the near-land battlespace. It will take us to improve our Navy's global reach further than we have today. Its affordable and its reconfigurable mission—focused-mission warship design is core to handling the swarming surface threat, the countermine challenges that we have, and submarines in the contested littorals. LCS meets that threat today and has the flexibility to continue to improve and face upcoming threats in the future.

We certainly intend to take LCS into harm's way. LCS is a warship that has credible combat systems. If damaged in combat, she is built to survive and then withdraw. In terms of aviation and unmanned system, this ship has more aviation and off-board vehicle capability than any surface combatant of comparable size in the world.

I want to be clear on this fact: LCS will deploy with effective mission modules. Each of LCS's three mission modules—the antisurface warfare, the mine countermeasures, and antisubmarine warfare—offers credible combat power greater than what we have today.

With that in mind, I would like to give just a quick thumbnail sketch of these capabilities. I would offer I have had the opportunity to talk to all of our forward fleet commanders, the 7th Fleet commander in the western Pacific, the 5th Fleet commander in the Gulf, and the 6th Fleet commander in the Mediterranean, and what I am about to say they all agree with and recognize the importance.

For the antisurface warfare capability, we provide an armed SH-60 Romeo helicopter. We will eventually provide Fire Scout VTUAV [Vertical Take-Off and Landing Tactical Unmanned Aerial Vehicle]. It comes with two highly effective 30-millimeter cannons, and that supplements the core 57-millimeter main gun. This gives LCS a capability that is equal to or exceeds any of our small combatants that we have today.

The package additionally includes two 11-meter RHIBs, which are rigid hull inflatable boats, and comes with a dedicated boarding team when configured in this manner. The 11-meter RHIBs are a

great enhancement over the 7-meter RHIBs that we have predominantly in the fleet and allow us to conduct maritime interdiction operations in antipiracy actions, a point made very specifically to me the other day by our 5th Fleet commander.

For mine countermeasures [MCM], the initial increment will be about twice as effective as what we have on our MCM-1 class *Avenger* mine sweeps, and it comes with more precise sonar capability for rapid hunting and, therefore, avoiding of mines, which is clearly where we are going in the 5th Fleet AOR [area of responsibility]. As we go through the enhancements, the capability will expand to about three times the capability of what we currently have in inventory, and we do that without putting the ship and, therefore, our sailors into the minefield, enhancing their safety.

And finally, our antisubmarine warfare capabilities are equally impressive. It comes both with passive and active towed arrays and variable-depth sonars to provide a tremendous capability not only where we could escort our battle groups at sea, but specifically designed to be effective in the littoral.

So we have really developed and produced a terrific capability. It is the right thing to do, and I stand forward looking forward to your questions here as we go throughout the hearing.

Thank you.

[The joint prepared statement of Admiral Hunt and Secretary Stackley can be found in the Appendix on page 47.]

Mr. FORBES. Admiral, thank you. I am sure the Members are going to look forward to asking you a number of questions in just a few moments.

And, Mr. Secretary, tell us the status of the program now. We know the admiral has told us why we need it, and let us hear where we are going.

**STATEMENT OF HON. SEAN J. STACKLEY, ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT AND ACQUISITION), DEPARTMENT OF DEFENSE**

Secretary STACKLEY. Yes, sir. Yes, sir, thank you.

And I am going to start by putting this in the context of the overall shipbuilding requirements. So I will start with the fact that today's Navy is a battle force of 286 ships, about half of which are underway on any given day, providing maritime security, missile defense, intelligence, surveillance, reconnaissance as needed, where needed. They are conducting antipiracy patrols, global partnership stations, humanitarian assistance, and all the while they are training and repairing for the next deployment, the next operation.

And whether measured by the breadth and pace of today's operations or by the defense strategy's call for increased naval presence from the Middle East to the Pacific, the broad range of missions your Navy is called upon to perform relies upon a fleet that—as outlined by the CNO [Chief of Naval Operations] in his report to Congress earlier this year—a fleet that is globally present, operating forward, a fleet made of a balanced mix of ships, a fleet that is 306 ships in number.

The Navy's objective to reach the 300-ship level by the end of this decade is more an imperative than a goal if your fleet is to meet the missions called for by the Nation, while sustaining the

operational tempo that we have all grown to expect of our ships and sailors. This requires that we build that balanced mix of ships per the CNO's requirements at a rate of about 10 ships per year, and that we not merely control costs, but that we drive down costs in each of our new construction programs.

The Littoral Combat Ship, or LCS, is central to this strategy. The LCS's high speed and low draft design make the ship uniquely qualified for operations ranging from open ocean to coastal or littoral waters. The investment in automated systems and low-maintenance design make the ship capable of operations at manning levels of less than half that of the ships she will replace. The sea-frame designed to naval vessel rules with an installed combat system capable of meeting the ship's self-defense requirements provides a level of survivability matched to the threat in which she will operate. And, most importantly, the modular mission package design, call it flexibility, call it agility, the LCS's ability to put to sea with a warfare system and crew tailored to meet its assigned mission is a classic force multiplier.

Today three distinct mission packages are in development and testing: surface warfare mission package designed to meet the emerging threat proposed by fast inshore attack craft; mine countermeasures mission package designed to close a critical, absolutely critical, warfighting gap in mine warfare; and an antisubmarine warfare mission package designed to provide greater capacity to combat the growing threat posed by the proliferation of increasingly quiet attack submarines.

Each of these mission packages has made significant strides this past year towards respective operational test milestones. In fact, today the USS *Freedom*, LCS 1, deployed to the western Pacific with the first increment of the surface warfare mission package on board, is meeting the combatant commander's demands in that theater of operations. Meanwhile, the USS *Independence*, LCS 2, operating in her home port of San Diego, is serving as the operational test ship for the first increment of the mine countermeasures mission package and soon will be joined by the USS *Fort Worth*, LCS 3, operating with the developmental model of the next increment of the surface warfare mission package.

The Navy's strategy for delivering of these mission modules is a textbook case of best practices. First, the mission modules are designed with an open architecture, which provides the ability to upgrade rapidly as new technologies emerge, and which provides the ability to compete future upgrades throughout the ship's life.

Second, mission modules are integrated into the ship via standard interfaces, which means that upgrades to the mission modules are accomplished without impacting the ship. This breakthrough design approach provides the LCS with the unique ability to upgrade its mission systems without lengthy, costly, disruptive depot modernization periods required by other ship classes.

Third, mission modules can be rapidly swapped out if called for by a change to the ship's anticipated mission.

And fourth, employing these design characteristics, the Navy is able to field mission packages utilizing an incremental fielding plan that manages risks, while providing urgently needed capability and capacity.

Specifically, by leveraging mature technologies and off-the-shelf systems, the first increments of LCS mission packages provide much-needed capacity, exceeding that available in the fleet today. Meanwhile we continue to develop new technologies and systems needed to fill gaps in today's warfighting capabilities for incorporation in later increments.

Today the mission packages are on track to deliver the capability needed by the Navy, and they are doing so within the cost targets established for the program. In fact, the greatest risk to our mission package program is not technical. Today the greatest risk is that posed by the disruption and delay caused by stop and start, and slowdown caused by continuing resolutions, sequestration, and other budget reductions.

With specific regard to LCS ship or seaframe production, lessons learned from the lead ships have been thoroughly incorporated into the production plan. Lead ship design deficiencies have been corrected, and the design is very stable, very stable, with design changes reduced by 80 to 90 percent in follow ships.

The significant facility improvements and investment in workforce training made by each shipyard has resulted in greatly improved efficiency in each ship's construction. The vendor base is leveraging the stability provided by the long-term LCS contract to drive down costs. By every measure quality is high, meeting and exceeding standards set by the Naval Sea Systems Command and the Navy's Board of Inspection and Survey, and overall the dual-block buy, contracts for 10 ships over 5 years at each of the shipbuilders, is delivering on the \$2.9 billion savings announced at award.

In summary, LCS provides the capacity the Navy needs today to fill critical gaps in our warfighting ability, and as we continue to field future increments of LCS mission packages, we will be able to provide much-needed capabilities that do not exist in the fleet today.

The LCS program was initiated with critical flaws, we are all aware of that; however, current execution of the LCS program is following best practices in acquisition. Holding requirements stable, holding the design stable, leveraging competition to the fullest, our costs are under control and greatly improved, and contained within fixed-price contracts. Risk is well managed by leveraging mature technologies and employing an incremental approach to upgrading the program's modular mission systems. Now is not the time to slow the program and add costs.

We have decisions to make before we proceed in fiscal year 2016 beyond the current block buy. We will take a fully informed business and warfighting-based approach to these decisions, and we are committed to working with Congress to provide transparency as we formulate these decisions.

This is our most affordable warship program. It is on a critical path to meeting the Navy's force structure requirements as outlined by the Chief of Naval Operations. There are challenges yet ahead, and there is need for further improvement, as there is in each of our shipbuilding and aviation programs, but we believe we have properly assessed these challenges, and we are going about the business of meeting these challenges with a degree of rigor and

discipline and, too, urgency matched to the critical need for these ships in the fleet.

We thank you for your past support, we urge your continued support, we welcome your oversight, and we look forward to answering your questions.

Mr. FORBES. Thank you, Mr. Secretary.

[The joint prepared statement of Secretary Stackley and Admiral Hunt can be found in the Appendix on page 47.]

Mr. FORBES. Mr. Francis.

**STATEMENT OF PAUL L. FRANCIS, MANAGING DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE**

Mr. FRANCIS. Thank you, Mr. Chairman.

Mr. Chairman, Mr. Courtney, members of the subcommittee and other Members, good morning. And I am happy to be here to participate in the discussion of the Littoral Combat Ship. I think we are all well aware of the unique capabilities and features that the ship offers, and I think we would all like to see the ship reach its full potential. I will give you a quick snapshot of where we see the program today in terms of seaframes, mission modules, and the concept of operations.

I think of the three, the seaframes are the furthest along, and I would agree with what Mr. Stackley said about the production of the ships being under control, costs being under control; I think design in pretty good shape. There is significant testing yet to be done, shock trials and survivability trials, and then testing out the combat system, and the Navy is looking at some design changes for the future, doing some studies on that. So we will need to see the effects of those.

On the mission modules, they have had a much tougher go of it. They have not done that well in testing. There is quite a bit to go yet on the mission modules, and I wouldn't say that the configuration of the modules, particularly regarding the mine countermeasures, is stable at this point.

I think the long pole in the tent right now is the concept of operations, which involves the manning, the swapping out of the mission modules in theater, and the maintenance support concept, which is basically off the ship and on shore. The ship itself is not going to have much onboard maintenance capability. And while I see the seaframes and the modules as giving the ship its technical ability, it is really the CONOPS [concept of operations] that give it its capability. So those abilities won't be able to be brought to bear unless the support of the ship works. So at this point I think one can be hopeful, but not yet confident that the ship is going to deliver on its full capability.

Let me switch now briefly to oversight. In my view, the primary oversight mechanisms that we applied to major weapons systems have not been applied on the LCS program, and let me give you some examples. When a program starts, you would do typically an analysis of alternatives and then pick the best alternative. In the case of LCS, the ship was picked first, and then the analysis of alternatives done afterwards.

In shipbuilding you have a sequence where you do design, and then you do construction. When we started LCS, we did design and construction concurrently.

In shipbuilding you have a Milestone B decision that authorizes the detailed design and construction of the lead ship. When we had Milestone B on the LCS, we had already 24 ships under contract. On the mission modules, those are weapons systems, Milestone B on a weapons system authorizes the beginning of engineering development. Now, we haven't had a Milestone B on mission modules yet, but two of them are already in production.

And then finally, law and policy says before you go into full-rate production, a program has to go through operational testing. I would say that the LCS today is in full-rate production. We authorized four ships a year in 2012, which is the full rate anticipated, yet operational testing is not going to occur until 2019.

So, in my view, the strategy up to this point on LCS has been buy before fly, and at this point we are producing at full rate, yet we are still experimenting with the ship. I think the Department of Defense has instituted a number of mechanisms to try to do reviews, cost studies, Defense Acquisition Board reviews every year, but I believe, in my view, that these are workarounds for the oversight mechanisms that were not used.

So what do we do now? I think we have to look at the program the way it is. It is a ship in full-rate production, but its operational effectiveness will not be demonstrated for years to come. That is where we are. We have to look at the ship today as being substantially bought already, so you are going to have to provide the support it requires, whether it is crew changes, whether it is mission module updates, whether it is additional spares. We already know we need additional manning on shore to do the offshore maintenance. So you will have to provide that for the ships already done.

In my mind, the report we have issued today makes rather modest recommendations on the program. We say, put strings on the fiscal year 2014 money, and have the Navy come back and tell you what design changes are we anticipating on the ship. We also ask the Navy to come back and say—to tell you what are the relative advantages and disadvantages of each ship as they perform each mission. Now, the Navy is already doing studies on these. It should be pretty easy to do, and you ought to know it, so I don't see that as halting the program. These are things I think the Navy could do as a condition for getting the money.

We have also made other recommendations that would be relevant to the 2016 block buy. This is the next block of ships. It is a very big decision coming up. What we have recommended is keep the production of the ships to a minimum rate during that block buy at least until we get through operational testing, and in line with that, we say, hey, keep the mission modules' production rate minimum so—just enough to support testing.

Now, the Department does not agree with us on that and says, hey, we are in full rate, we are making four a year, we have great prices. If we slow it down, prices are going to go up, and we have to produce the mission modules to keep pace with the ships. I would just ask you to be wary of that dynamic because it creates,

in my mind, irreversible momentum to go forward and can tie your hands. So just be wary of that.

So what can you do? I think about you having a very good window for oversight over the next 2 years. In spring of 2015, you will have to consider the Navy's proposal for the 2016 block buy, so your dates actually come a little bit faster than you might otherwise think. At that point I think you can employ some of the mechanisms that we have recommended on the 2014 and 2015 buy to get the Navy to provide you information that you need to make the decisions on those two ships, and I would pay particular attention to what the Navy proposes for the block 2016 buy. For example, if that proposal came in for a large number of ships or a number of ships that, say, went beyond operational testing, then I think your hands really could be tied in oversight because we will have locked in the bulk of the program.

So in closing I would say you have some leverage between now and the spring of 2015. Use it. And I wouldn't be too overcome by concerns that this is going to be devastating to the program. I don't think it is.

So, Mr. Chairman, Mr. Courtney, that concludes my remarks.

Mr. FORBES. Mr. Francis, thank you.

[The prepared statement of Mr. Francis can be found in the Appendix on page 62.]

Mr. FORBES. And to all of our panelists, we want to just tell you how much again we appreciate you being here. We also understand you represent large teams behind you. As we thank you, we are also thanking the professionalism that they bring today.

I want to just tell you, today is not a deposition, so we don't want to have a situation we are asking questions, and you feel like you have to get out without answering anything in a short period of time. We want you to have that discussion.

I am going to defer all of my questions because this is one of the most bipartisan subcommittees probably we have in Congress. We have enormous respect for each other. A lot of expertise represented in this room today. I want to make sure all of our Members can ask their questions.

With that, I would like to ask unanimous consent that we can reduce our time from 5 minutes to 4 minutes, because I think we have votes sit at 11 o'clock coming up, and I want to make sure we can get as many Members in as possible. I think Mr. Courtney has agreed to that. Is there any objection to that? If not, we will reduce our time to 4 minutes.

I will ask maybe some questions in between just to link up with the previous questions. If any of you want to comment, just let me know, give me a signal. We want to make sure you get whatever you need on the record.

With that, I would like to go first to my good friend Mr. Courtney for his questions.

Mr. COURTNEY. Thank you, Mr. Chairman, and, again, I know we have a lot of attendance here today, so I am going to try to keep my questions very brief and succinct.

Again just, Mr. Stackley, I was wondering if you could just kind of help us sort of understand the study suggestion that came out of GAO where they, again, suggested to Congress that we restrict

funding until studies have been complete. Are these studies actually under way? Are they close to being finished, I mean? And what do you see as the impact; is it neutral or is it significant if such a restriction was put into place, again just on the studies?

Secretary STACKLEY. Yes, sir. So first on the studies. Every ship-building program that we have got we have got ongoing studies in terms of looking at what further capabilities do we need to bring to the ship, what is the cost associated with bringing that capability, what is the impact to the program, and then what is the best way for incorporating those upgrades if it is determined that the cost is well worth the added capability?

So specifically for the LCS program, I would characterize we have three not so much studies, but we are doing three looks at the program. First is the continuation of correction of deficiencies. You know, we have the first ship out on deployment, and one of the things that we are gaining from that deployment is lessons learned in terms of extended persistent operations in theater, what do we need to do different going forward to improve its performance.

Chairman Forbes, in your statement you made reference to the SSDGs [ship service diesel generators]. That is probably the most significant design deficiency that we are dealing with today. We do have reliability issues that we have identified, we have fixes in place on the follow ships, and as LCS 1 continues its deployment, we will be incorporating those fixes on LCS 1 to address that issue. So there are correction of deficiencies that are ongoing.

The second is I will call it commonality. We want to achieve greater commonality with fleet standard systems and across the class, so we are looking at two areas in which commonality have big bang for the buck. One is what we call C4I, or our command, control, communications information systems; and the second is in the combat system itself.

So we have done studies in terms of what alternatives we would look at. The open architecture design of the LCS gives us great ability to bring forward those type of upgrades without significant disruption to the platform, and now we are going at looking at the specific details in terms of what changes would be required to the platform, what timeframe makes sense to do that, and what is the associated cost.

So, for example, we look at the fiscal year 2016 procurement as that would be a likely time to incorporate upgrades in that regard. We do this very thoughtfully, we do it through a configuration steering board, we go through the rigor of the design and the cost estimating, and we work with the shipbuilders to ensure it does not set us backwards.

The third area would be in the mission modules themselves. As I described in my opening statement, what we are doing today is we are leveraging off-the-shelf technologies for the early increments, and we are also continuing with development of new technologies. In that development of new technologies arena, we have had a couple of setbacks. We have relied on systems that were either being procured by one of the other services that we were going to leverage, specifically the non-line-of-sight missile that the Army was producing or developing to produce. They have cancelled that

program, so we are moving on with the development of an alternative surface-to-surface mission module capability for a future LCS increment.

So those are the three types of studies that are ongoing, and we are doing this in broad daylight. We are not doing this behind closed doors. We are doing it in broad daylight. We welcome the oversight, we welcome the insight that we can provide to you all, because we are going to be coming back to you at least annually with a budget to discuss and propose future investments in those regards.

Mr. COURTNEY. Thank you.

And just one other sort of housekeeping question. Again, the GAO recommendation was to buy sort of a minimum quantity of ships to preserve the industrial base until full production—full-rate production design decision is made. In the Navy's response you state that the Navy plans to buy LCS seaframes in accordance with the most recent long-range shipbuilding plan.

So I guess the question is, again, in your testimony you said we are building four a year right now, but the shipbuilding plan, when we checked that, it was two a year for 2016 and 2018. Again, is that the number for those years, two?

Secretary STACKLEY. Yes, sir. Yes, sir. So both the shipbuilding plan and the President's budget that was submitted for 2014 FYDP [Future Years Defense Program], we continue with the block buy through 2015, which is four per year, and the budget and the long-range plan lays up a reduction to two per year.

So let me go to the specific, the second half of your question, which is, well, what would the impact be of slowing down the program, taking a pause, or delaying in 2014 while we continue to do further studies? Well, the impact would be many-fold. First, there is going to be an impact to the fleet because the fleet needs the capability, and this is delaying getting the capability out there.

Second, there is an impact associated with the cost to the program. Any delay in any shipbuilding program is going to have a cost impact, and so we have to decide, is it worth that impact. As I described, we believe that the seaframe production is very stable. We are going forward with off-the-shelf technologies on the mission packages, which we are developing. So to delay the fiscal year 2014 ships, which would be delivering in the 2017, 2018 timeframe, to await completion of later increments developmental testing, I think that is going in the absolute wrong direction. We will be incurring unnecessary added cost on the program associated with that disruption. What we would rather be doing is sitting down with Congress as we submit future budgets and walking through in great detail exactly where we are, why we believe this is the exact right thing to do for the Navy and the Nation, and look for your support in that regard.

Third impact beyond just the loss of the capability and the added cost is the industrial base. Both of these shipbuilders have done an outstanding job of responding to the issues and the failures on the lead ship to train up a skilled crew, to make investments in their facilities, to hit the targets that we set with the block buy, and right now they are getting up on the governor for steady-state production. Again, to insert a pause, a break in that production in the

shipbuilding program is going to have impact not just to the cost, but to that workforce, that skilled workforce, that we have got in place. I do not recommend that.

Mr. COURTNEY. Thank you.

Mr. FORBES. Mr. Francis, you wanted to respond to that?

Mr. FRANCIS. Yes, sir. Thank you.

I think the things Mr. Stackley just talked about, the studies they are doing, I think that is basically the essence of our recommendation, to come back and tell you what they have in mind and when, and recall that the seaframe is doing well now because it is coming down its learning curve. So of real importance would be are we considering any design changes for the 2016 block that could interrupt that learning curve and maybe change prices?

So that is the essence of our recommendation. The Navy has until March before it actually gets that next block under way. I think there is plenty of time. So I don't envision a scenario where the 2014 buy actually gets held up pending these studies. I think the Navy could in pretty good time give you the information you need.

And then on the shipbuilding plan, the numbers are going on, as Mr. Stackley said, from 2016 on, are less than four ships a year, so I don't know if there is a down select envisioned out there. If there isn't, then that rate would comport with our other recommendations, which is keep the rate at—the minimum sustained rate would be between two and three ships a year until operational testing. So we might be in violent agreement.

Mr. FORBES. Okay, thank you.

Gentlemen—

Secretary STACKLEY. I would like to have that—

Mr. FORBES. Oh, sure, yeah.

Secretary STACKLEY. I would like to have that on the record: GAO said they are in agreement with the Navy.

Mr. FORBES. Notice he said “violent agreement.”

Mr. Runyan is recognized for 4 minutes.

Mr. RUNYAN. Thank you, Chairman.

Mr. Stackley kind of answered my first question about increased costs, but the next one kind of deals with it also, too. Admiral Hunt, talking about the *Freedom* getting back underway less than a day after a generator issue, is that problem more systemic, and does it increase the costs of future ships to fix it?

Admiral HUNT. I think the most recent casualties that we have had to *Freedom* are things that you get in normal operations, quite frankly. So we have a first of, you know, ship out there going through the paces. It is one of the reasons why we wanted to get *Freedom* on deployment out there in a real-world operating situation as quickly as we did.

I am very encouraged in the fact that the maintenance team in place is able to take these casualties, repair them in stride, and get the ship back under way. I would be more concerned if we had casualties that we found were surprising us, we didn't have the right ILS [integrated logistics support], the logistic support, in place, and we had big delays. We have not seen that.

So this is, first of all, I think, expected. You know, one of the things that we have asked is we have gone back and, to put some

historical context in this, taken a look at the FFG-7 program, the *Arleigh Burke* program, *Ticonderoga*. I may have the exact time-frame wrong, but *Arleigh Burke* when she first deployed, I think, ended up in a shipyard overseas in the Mediterranean for almost 2 months. We are not seeing that kind of stuff at all.

So I think we do have a good program in place, and we are adapting. We are learning, and we are putting the things that we learn straight into follow-on ships in a very useful way.

Secretary STACKLEY. Sir, can I add to that?

Mr. RUNYAN. Sure.

Secretary STACKLEY. Specifically with regard to the ship service diesel generators, first the requirement. Those generators are required to perform at 800 hours of operation between failures. Today what our experience is is 450 hours between failures. So that is the symptom of the problem. We have three known issues, one associated with the governor on the generator, one associated with the cooler that goes with the generator, and one associated with the size of the piping that is associated with coolant flow. There are fixes for all three. They are not all incorporated in LCS 1 today, but they are all being incorporated on the follow ships of that variant. So today we are working through these interruptions in terms of the ship's operations, if you will, to incorporate these failures. We have got to fix that.

The good news is that the ship is designed with four diesel generators. It requires two under operations plus one in stand-by, so there is redundancy in the system to overcome some of the shortfall in the operational availability, and there are fixes in place, and those fixes are largely contained to that package unit that shows up from the vendor, and they are being incorporated by the vendor. So the impact on the ship side will be minimized.

Mr. RUNYAN. Thank you.

And I don't know if Mr. Francis can answer this question, but I think it is kind of—I won't use the phrase "problematic," but it is something I think we are walking down when you talk about our acquisition process. I think another member of the Armed Services Committee, Ms. Duckworth, raises a question about concurrency in, you know, development. Are we kind of walking down the same path with the LCS as the F-35 in that realm and kind of don't know what the future holds?

Mr. FRANCIS. Mr. Runyan, I think there are some similarities there. I mean, it has been concurrent. I think problems with the generator that we just talked about, I don't think you minimize those, but I think these are things that the Navy is going to solve, you know. I don't think those are show stoppers.

But I think the discussion we are having today with 24 ships under contract and a number delivered and under construction, I think, sets a little different context. If we were talking about what don't we know about the configuration of the modules, and what they will be able to do, does the operational concept work, are we going to be able to swap the mission modules out in theater, if we were having this discussion 5 years ago on the first ship, I would say, hey, we are learning as we are going, and it is a pretty good strategy. At this point we are so far down the pike, we are quite

concurrent, and as I mentioned in my opening statement, our oversight tools are rather limited.

So this is, I think, emblematic of the acquisition process. This is how things go. So there is, I think, bigger things to do in the future about the acquisition process, and part of it is you have to put money on the table to get a program going, and generally money goes on the table about 2 years before the program starts. So it goes on the table on the basis of promises, promises about we think we are going to be five times better than anything we have, and we don't think it is going to cost much. As those promises get reduced over time, then we are way down the pike, and that is where we are.

So I think it is systemic. I think we put people in difficult positions in the Department because you have to be able to justify your program that way, and it is optimism, and it gets embedded. So, yes, we are playing out, I think, what is typical in the acquisition culture.

Mr. FORBES. Mr. Francis, the time is up. And let me just point out to our Members, we are told our floor votes are going to be ratcheted up a little quicker. In consultation with Mr. Courtney, we would like to ask unanimous consent we can reduce our time to 3 minutes each. I just want to get as many Members in as possible. Any objection?

We will reduce it to 3 minutes. And if you can, try to focus on one question. And we don't want to cut you guys off, but if you can make your answers as succinct as possible because we have a lot of Members that want to get their questions in.

And with that, we recognize Mr. Johnson from Georgia for 3 minutes. Mr. Johnson.

Mr. JOHNSON. Thank you, Mr. Chairman.

Mr. Stackley, you indicated that design costs are under control and—or design and costs are under control, but there are some design changes that are being considered.

And then, Mr. Francis, you indicated that for 2014 fiscal year, we should hold the money and ask for any design changes, and you also recommended that we keep the block 2016 buy, keep it at a minimum amount.

What I would like to ask Secretary Stackley is can you tell us what would be the impact on the Navy in terms of meeting its future requirements if this committee were to follow the recommendations of Mr. Francis?

Secretary STACKLEY. Yes, sir, and we did some clarification in terms of his recommendation and my earlier response.

Mr. JOHNSON. And then I would like to get Mr. Francis' rebuttal, if you will.

Secretary STACKLEY. Yes, sir. Our plan to continue with procurement of the block buy, which would mean four ships in 2014 and another four ships in 2015, is central to, one, getting the capability that is in the CNO's requirements letter to Congress, and is filling a shortfall that we have today in terms of overall force structure, getting up to the 300 ships. Those four ships in 2014 and four ships in 2015 with the capability they bring, we need those for operational considerations, and then, as earlier discussed, disrupting that flow in the shipyard and the vendor base will drive costs into

the program, which is exactly what we are trying to avoid. So that is a short description of what the impact would be.

Understanding what Mr. Francis described earlier in terms of providing more information, more insight to Congress in terms of where the Navy is going before we put those ships under award, under contract, we welcome that, and, in fact, we have monthly reports to Congress we are providing, we have quarterly reports to Congress we are providing, we have annual reports to Congress we are providing, we have briefings. We will provide you full insight, full daylight in terms of where we are going and the considerations that we are considering, the issues that are under consideration.

Mr. JOHNSON. Thank you.

Mr. Francis.

Mr. FRANCIS. Yes, sir. I think we are squared away on what our recommendation means. I would be surprised and disappointed if it actually did result in holding off the 2014 buy, because the studies are in place, and I think the answers could be given.

We pegged that to the 2014 money just as a forcing mechanism so that the Navy could come by or come back to you in good time. Really, the things that we are talking about will affect most directly the 2016 buy, but you should have some time to consider that. So I think if the Navy comes forward with that information, I don't see why the contract couldn't be awarded, and you will have the information.

Mr. JOHNSON. Thank you. I yield back.

Mr. FORBES. Mr. Johnson's questions are excellent questions. We may ask you guys to expand a little bit on those in written form, if you would, after this hearing.

[The information referred to can be found in the Appendix beginning on page 77.]

Mr. FORBES. And now we recognize the gentleman from Colorado Mr. Coffman for 3 minutes.

Mr. COFFMAN. Thank you, Mr. Chairman.

Admiral Hunt, we have two separate shipbuilders building Littoral Combat Ship, and I have read some analysis that this is really going to take, require separate crew training. Is that criticism valid? I mean, are these ships by these two different builders really that different that require separate crew training?

Admiral HUNT. There will clearly be some differences in the training, but fundamentally the training that we have established and set up in the schoolhouse in San Diego is very similar; same instructors walking through folks. The differences is primarily going to be operating the consoles that they have. That is something that is achievable. It is programmed in right now, and I think we will manage that very satisfactorily.

Mr. COFFMAN. So as we proceed, then, that a sailor on one variant of this class of ship, would they be expected, then, to proceed with their career in that same variant, or can they cross over easily?

Admiral HUNT. You know, again, it is going to depend on exactly what kind of sailor that we are talking about. So diesels are different, gas turbines are different. There will be a different training in that. But within the Navy we do that quite often. When you go between cruisers and destroyers and frigates, there are changes. Is

that a major impact? I don't believe it is. I think it is something that we are going to work through. It is clearly within the realm of the training system that we have set up right now.

Mr. COFFMAN. When you talk about the open architecture of the Littoral Combat Ship, I mean, really how significant is that in reducing costs in the long run, because we do service life extension programs all the time on other ships. Secretary Stackley, would you want to—

Admiral HUNT. If I could, I would love to take that.

I think that is the essence of the program. I think it is vitally important. I have lived my entire Navy career where we have made changes, and we routinely do, especially in combat systems, to Navy ships, and when we do them on the older legacy ships, we rip out everything to bare metal. We pull cables, we take it out, we rebuild it. I have seen it, I have lived it as the type commander on cruisers. You walk into a space, and it is completely bare metal.

That is a very expensive way to upgrade and is really one of the biggest challenges that we have in the Navy in modernization. The modularity and open systems architecture that this ship provides is the entryway to the way the Navy must do ship construction in the future.

I am very encouraged by what we have got. I think you are going to see more and more of this, and it is going to be a huge force multiplier not only from the cost perspective—and I will yield to Mr. Stackley on that—but equally important from a combat systems enhancement, the reliability and safety that we get from it.

Secretary STACKLEY. I just want to provide a couple crystal-clear examples. First the combat system. Now, this is the core of the ship's weapon system; two different versions, both of them are described as open. One is Lockheed Martin variant, and the other variant is a Northrop Grumman variant on the LCS 2.

So what we did to challenge this was we took the LCS 2 combat system, we dropped the software that came with it, and we brought the Navy's Ship Self-Defense System [SSDS] software to the system, loaded it up, and demonstrated that we could drive that combat system with the Navy's SSDS system, and then likewise porting over to the Lockheed Martin version. So now we have choices. When you talk about commonality, we have choices in terms of loading up the combat system for LCS 1, LCS 2 to drive commonality and figure out what gives us best capability and cost.

That is software.

On the hardware side, describe the non-line-of-sight [NLOS] missile cancellation. We were able to quickly move over and look at other missile systems to fit the exact same form, fit and function that was provided by NLOS, and without disrupting the ship, we are developing and testing different missiles to go in its place without missing stride in terms of the IOC [initial operating capability] date for that capability.

Mr. COFFMAN. Thank you, Mr. Chairman.

Mr. FORBES. The gentleman from Washington, Mr. Larsen, is recognized for 3 minutes.

Mr. LARSEN. Thank you, Mr. Chairman.

I think this subcommittee and the committee as a whole has a like/hate relationship. We like it, and we hate hearing about it all

the time. And I have been here in my 13th year along with Mr. Forbes, and it hasn't been that long since I have been hearing about it, but it has been about half that time. And it is usually never 100 percent positive or 100 percent negative, but we just keep hearing about it. And this today is just the next chapter in a long book, a book I want to finish, and I want you all to finish. I want to stop reading this book.

But I am concerned that this is turning into a 52-ship Beta program. I keep hearing about we are deploying, but we are testing while we are deploying, in the hopes and eventuality we will have fully operational platforms with the modules in place, using them. But we don't have the modules in place, and we are still out deploying and testing the platforms we have.

So the first question I have for Mr. Stackley is—maybe I am wrong, and I have been wrong on a lot of things—how similar is this deploy and test model to other classes of ships? We do it on other platforms or other programs that sometimes works and sometimes don't, but we are talking about a multimillion-dollar platform here, so how similar is this?

Secretary STACKLEY. Yes, sir. Let me describe that I have been involved with every lead ship since the late 1970s that the U.S. Navy has fielded either as a sailor, as a designer, as a production manager, as a program manager, as an oversight member in the Senate Armed Services Committee and in this job. This is the way we bring ships to the fleet. We do not have a prototype. We do not have a prototype. LCS 1 is the prototype for this class. That is the way ships are built and fielded.

The development that is going on in parallel with deploying the ship—this is for future upgrades and increments that have been laid out in the mission modules; not to the ship itself, to the mission modules that bring that weapon system capability—but if you look at the early increments, those capabilities are in the fleet today. It is the 60 helicopter; it is the AQS-20 Alpha sensor that protects the mine. Remote mine-hunting system, she has demonstrated her ability to hit her IOC date.

You go right on down the list of early capabilities, the 30-millimeter gun, they are in the fleet today. We are not talking about developing concurrent with building; we are talking about integrating these capabilities into the mission package, completing the test program, and getting it out into the fleet. The risk in these early increments is very low, very well managed.

There are some developments for later increments that we are breaking new ground, and that is why they are coming in later increments, and we are not trying to do "Big Bang" approach in the early instantiation.

So this is the way we field ships. We did get out of the blocks wrong on this program, absolutely, and that is why you are reading that book over and over again, but we have corrected those issues. We have to make sure we don't backslide, and we, again, welcome your oversight as we continue to march down this path.

Mr. LARSEN. Thank you.

Mr. FORBES. The chairman of the Readiness Subcommittee, Mr. Wittman, is recognized for 3 minutes.

Mr. WITTMAN. Thank you, Mr. Chairman.

Gentlemen, thank you so much for joining us today.

Secretary Stackley, I want to get right to an issue of survivability, I want to give you some examples. If you go to 1987, USS *Stark* was hit by two Exocet missiles, killing 37 sailors. The ship didn't sink; made temporary repairs, made its way home under its own power. In 1988, USS *Samuel B. Roberts* hit a naval mine in Persian Gulf. The ship didn't sink. It made it out of the minefield under its own power. In 2000, we all know the story of the USS *Cole* was attacked by terrorists in Aden, Yemen, killing 17 sailors. The ship didn't sink. We all know the story of how it was put on a drydock ship, repaired, back into service today. In 2006, the INS *Hanit*, an Israeli Navy *Sa'ar 5* corvette built in the United States, was hit by a Charlie-802 antiship missile killing four sailors. The ship didn't sink.

Let me ask you this: The Navy plans to do survivability trials in 2014 and 2015 on LCS. The Navy's Director, though, of Operational Tests and Evaluation has reported the LCS is not expected to maintain mission capability after taking a significant hit in hostile combat environment.

My question is this: By the time the Navy completes these LCS capability and survivability trials, the Navy will have either procured or have under contract more than half of the ships in this class. The question is this: Will LCS1 or LCS2 survive a hit from an Exocet missile, a mine, a Charlie-802 antiship missile, or a small boat packed with high-energy explosives?

Secretary STACKLEY. Yes, sir. Let me first describe that we don't wait for the final test to determine how we are faring. So every aspect of the design and the testing of each component, each element of a ship leads to that final exam associated with the total ship's survivability trials and the ship shock trial, just as in every other shipbuilding program. And every piece of analysis, every aspect of the design data says that we are going to meet the survivability requirements established for the LCS.

Now, first, each of the examples that you described, they took a hit, and they came home safely. They did not carry on their mission. They did not carry on their mission. When we talk about the level of survivability for the LCS, it has to be able to, one, defend itself. And there is a threshold requirement of what it needs to be able to defend itself against, whether it is an Exocet, whether it is a fast attack craft that is approaching the ship. So it designed to meet that threat. Then if it takes a hit, it is designed to survive through watertight subdivision design, through advanced fire-fighting systems, to automated systems that respond immediately to the impact and contain the impact. It is designed to survive that and then be brought home safely.

Mr. FRANCIS. Mr. Wittman, may I just comment? One of the things on the LCS regarding survivability, and you are right, the final tests are in 2014 and beyond, but the expectations of the ship have been lowered over time. So I think originally when chapter 1 of the book, if you will, we are talking about the ship being able to go into areas where there was access denial and so forth and hostile environment, that has been backed off to benign low-threat environment. So that is a hedge against survivability. And also I think the thought was it was going to be a self-sufficient surface

combatant. It wasn't necessarily going to need a destroyer or cruiser to help it with certain threats. I think we backed off on that as well. It will need it.

So two things are going on. There is the survivability of the seaframe itself, and then adjustments to what situations we are going to put the seaframe in.

Mr. WITTMAN. Very good.

Thank you, Mr. Chairman. I yield back.

Mr. FORBES. I thank the gentleman.

Admiral HUNT. Mr. Chairman, could I comment on that?

Mr. FORBES. Absolutely.

Admiral HUNT. The two things for survivability. First of all, as naval officers we fight our group. It is not individual ships; we put it together. The cruisers protect the aircraft carrier; the aircraft themselves protect the larger group. So we work in a layered system, if you will.

It is incumbent upon that leader, whether he is a strike group commander or a fleet commander, to make sure that he does that in as safe an operational situation that he can make, and he will do so.

This ship is designed exactly to be the right survivability in the right operations that we are going to put it in. It truly is. It was designed with lower RCS, radar cross-section. It has got speed. It can maneuver rapidly. All that contributes directly to self-defense from a ship driver perspective. So I feel very comfortable with that.

The kind of missions that we get it if it goes into a higher-threat environment, it will come with that protection, and that is coalition protection. The course that I am teaching right now up in Newport, Rhode Island, at the war college for our next-generation fleet commanders, it talks about how we do that and how we think about it. So I am comfortable there.

From the ship perspective itself, when we modified the initial design to follow enabled vessel rules, we enhanced and increased the survivability of the ship itself. The firefighting system is solid. The configuration of the ship, the way she is built, is solid. It is good enough to protect our sailors and extract yourself from that dangerous situation, and that is really it.

Mr. FORBES. And we need to go to Mr. Hunter from California. He is recognized for 3 minutes.

Mr. HUNTER. Thank you, Mr. Chairman.

First question is concerning the NLOS system that you no longer do, and have you heard the Brimstone missile? You all just did a test with the Brimstone and hit four small boats, swarm in the LCS, and what have you thought about that for a replacement.

Secretary STACKLEY. Yes, sir, we have taken a good look at the Brimstone. It has got some desirable qualities. But I can't tell you—

Mr. HUNTER. It is relatively inexpensive.

Secretary STACKLEY. It is relatively inexpensive, but I cannot tell you that we are running to that missile. We have other alternatives that are in the mix, yes, sir.

Mr. HUNTER. Number two, what type of ships would you put in if you had to go up against China, if you had to go up against a

China or a North Korea? Would you use the LCS, or would you use more destroyers and subs? What type of ships would you use?

Admiral HUNT. For part of that operation, I would absolutely use LCS. So it is interesting right now, again, we are doing a war game that is part of the scenario that we are looking at, LCS is part of the mix. You know, for the initial phase to be in the theater and sense the environment before hostilities may occur, we would use all the assets available.

So she is a sensor, she has got speed, she can, you know, link that information back to the larger group, and she provides those unique capabilities in each one of the mission modules that the fleet commander would then tailor, depending on how the operational concept developed that could be used. So from the surface to the ASW to the mine, I would expect all those capabilities will be added to the mix.

Mr. HUNTER. If you don't know what the modules do yet because they don't exist as modular, for them to be able to be plugged in, how do you know what the conduct of operations would be if you don't have the module?

Admiral HUNT. I think we have a good idea what the initial increments of those modules will provide. We certainly have the surface module right now on *Freedom* in Singapore.

Mr. HUNTER. But you would have to replace the NLOS on surface module, right? So you don't really have it; you kind of have it. You don't really have anything. You kind of have—

Admiral HUNT. That is an additional capability. What she provides right now is equal to what you have on an FFG.

Mr. HUNTER. Well, then, why get a new ship if what you have is just equal, right?

Admiral HUNT. Because the FFGs are timing out from a costing perspective, modernization, and being able to adapt it.

Mr. HUNTER. My question is, though, if you had to go up against a China or a North Korea, the LCS is not the best ship for that scenario. It is not the best type of ship. Now, you could use anything. You could use a RHIB, you could use an unmanned underwater vehicle, you could use a whole lot of stuff. But I have talked to a number of admirals and Navy experts that say the LCS is not what you want there. It is great for the Strait of Hormuz, it is great for other areas, but with the Asia pivot it is not what you want. You want more cruisers. You want more subs that have survivability against the long-range threat that China provides.

Admiral HUNT. Two things, Congressman. The first is we set the stage before the conflict begins. LCS is absolutely key to that. And I just had a 2-hour discussion with our 7th Fleet commander, who absolutely is ecstatic about what else he has us doing in theater right now and the contribution that it provides.

And the second piece is—

Mr. HUNTER. I don't understand, though. What the LCS has done in theater so far is dock at a harbor that other ships couldn't dock at because it has a very shallow draft, right? So it has done that. It has gone to some other docks.

Admiral HUNT. And she is out operating in the CARAT [Cooperation Afloat Readiness and Training] exercises throughout the region.

Mr. HUNTER. Doing doughnuts, right? Going really fast in circles? That is what the ship driver said a couple days ago, right?

Admiral HUNT. She is out performing the missions as desired by our 7th Fleet commander.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. FORBES. To the witnesses, I hate to impose on you, but we have a vote on the floor that is going to probably run about 40 minutes. What are your schedules like? Can you take a recess and let us come back? I know it is tough on your schedules, but we have got a few Members that really would like to ask just a couple more questions. How are your schedules?

Secretary STACKLEY. Sir, we are at your service.

Mr. FORBES. We apologize for that. They don't call us and ask us if the votes are convenient now. But we will recess until the votes are completed, and then we will reconvene for whatever questions that remain.

Thank you.

[Recess.]

Mr. FORBES. Let me thank our witnesses for their patience in allowing us to get through that cycle of votes. And at this particular point in time, we would like to recognize the gentleman from Alabama, Mr. Rogers, for 5 minutes.

Mr. ROGERS. Thank you, Mr. Chairman.

Admiral Hunt, a key criticism of the GAO report was the Littoral Combat Ship program is that the Navy did not have yet a decision on how it is to be used. As the leader of LCS Council for over a year now and a veteran surface warfare officer, is there any question in your mind as to how this ship will be employed?

Admiral HUNT. Thank you for that question.

No, there isn't. I think we know very accurately how we are going to employ the ship with each of the modules.

Mr. ROGERS. Would you describe those, please?

Admiral HUNT. Certainly. The surface mission capability will be in the littoral, meaning in close to land. It will provide with its gun capability initially, and then, when you add on top of that the missile capability, the ability to go out and interdict small boats and small vessels that would be potentially opposing us as we moved amphibious ships or an aircraft carrier through choke points.

The second piece that that capability provides is it has excellent capability exceeding what we have now in our maritime interdiction operations, meaning taking a boarding party and going over doing antipiracy or anti-weapons-of-mass-destruction movement, the kinds of things that we are doing routinely in the Gulf of Aden, the Horn of Africa and around the waters of the Persian Gulf right now.

Mr. ROGERS. I understand that a key component of LCS concept is the mission package; however, does the Navy have a plan for utilizing seafame without the mission packages as well?

Admiral HUNT. No, it does not. In every instant of seeing how we would operate the platforms today, it would always be inherently with one of the three mission packages.

Mr. ROGERS. Mr. Stackley, the GAO has criticized the Navy's LCS program business case, stating that questions remain on cost,

the time needed to develop and field the system, and its anticipated capabilities. Will you address each of those three items?

Secretary STACKLEY. Yes, sir. In terms of cost, the program's cost performance today is very well understood and well behaved both in terms of the seaframes of the ship production and in terms of the mission packages.

I think one of the questions or concerns from the GAO has to deal with we will call it the program baseline that we are measuring against. We owe that to Congress, and we will bring that forward. In fact, Mr. Francis described that we get to go to a Milestone B long before this hearing was scheduled. In fact, we had the mission module Milestone B scheduled for this week where we did go through all those details to lock them into a formal document that will come forward to the Hill.

In the interim we do report annually inside of what is referred to as a selective acquisition record to Congress, and we are performing well within those costs that we are projecting. Good learning, good cost performance.

The second aspect I think you raised was schedule, with regards to schedule, again, ship production and mission modules. On the ship production side, we have adjusted schedules at the both of the shipyards on the order of 4 to 6 months for the early ships in the block buy, the smart thing to do. What we did not want to do was to incur costs or cost risk because of overly aggressive schedules within the shipyards.

The start-up of production on the block buys was somewhat disrupted by a gap that had occurred between the first couple of LCS ships and the decision to go forward with the block buy, and because of that disruption and the transition from earlier lead ships to that stable design that we are insisting upon to support production of the subsequent ships, there was, in fact, lag time that led to some schedule delay. We believe we have got that well captured, and today both Marinette up in Wisconsin and also in Alabama are performing in accordance with those schedules. Got to keep a watchful eye on it because we are continuing to ramp up in production, but we think we have schedule stability in place, and it is supporting our cost projections.

Mr. ROGERS. Great.

I want to ask you, you described earlier before we had to break for votes your history in the shipbuilding business, and that what you are doing with this system is consistent with what you have always done. Were you surprised at the GAO's observation that this was somehow outside the norm?

Secretary STACKLEY. I think GAO did a lengthy review of the LCS program that I think extended over 12 to 16 months. When I read the report, read their findings, my first reaction is we need to spend more time with the GAO to outline exactly what we are doing and why we are doing it. And we owe that to GAO, we owe that to Congress.

Shipbuilding is different from other acquisition. It is. LCS is different from other shipbuilding programs. And so by virtue of that fact, we have to explain why those differences make sense, and why we are on that path.

The second aspect of it is GAO asks a lot of questions in their report, critical questions. They are fair, and rather than providing a short and concise response, I think we need to engage with Congress and further with the GAO and provide the detailed responses that they warrant, because they are important for you all to understand where we are going, and that is necessary for us to earn and expect your support.

Mr. ROGERS. Thank you. My time has expired.

Mr. FORBES. Ms. Speier is recognized for 5 minutes.

Ms. SPEIER. Mr. Chairman, thank you, and thank you for your service to our country, all of you, and for the important work that we are addressing here today.

Mr. Francis, I am truly struck by your earlier testimony, and it reminds me a little bit of our lives in that Admiral Hunt in 2010 told Congress that the dual-acquisition strategy would save money. Now we hear the Navy is considering changes to increase the commonality between the two variants, as I recall it, these were two great alternatives that were being suggested, and so we really wanted both of them. It would be like any one of us saying, gosh, the Lamborghini is beautiful, and the Ferrari is beautiful; let us buy both of them, except for the fact that it costs a lot of money.

And I am troubled by the fact that we are purchasing first and testing second, and I think the taxpayers of this country expect us to be frugal in the way we move forward with this effort.

Now, the GAO had originally suggested that we go slow. I actually took that GAO recommendation and turned it into an amendment, which was held not to be in order by the Rules Committee when the NDA was taken up on the floor. So having had that happen, but having the good and sound recommendations that you have offered, how do we make sure that this 2-year oversight opportunity that we have is actually exercised in a way that we just don't say at the end of 2 years, well, too bad, we missed the window, we are going to build all these ships, they are not going to meet the standards, they are going to cost—the cost overruns are going to be extraordinary, and that is just the way it is?

I mean, we as Congress, we as this committee, I believe, have a responsibility to make sure that what we are building makes sense, makes sense for the long term. And I feel that there is this rush to construction, and we will worry about the details later.

So could you comment on that, please?

Mr. FRANCIS. Definitely.

We made a recommendation in August of 2010 that because operational testing was slipping, there were some problems with the mission modules at that point, and the ships and the modules were kind of getting out of sync. We recommended to the Department, resequence these and get them back in line so that you know what the combined capability of the seaframes and mission modules are before you get into operational testing. Now, the Department agreed with that, but since then the seaframes, if anything, have gone faster, the modules slower.

Ms. SPEIER. So they agree, but they then don't follow through with what they say?

Mr. FRANCIS. No. The strategy that they embarked on was a different strategy than what we had recommended.

Ms. SPEIER. So how do we trust anything?

Mr. FRANCIS. Well, I think you have to hold the Department accountable. I mean, we can talk about, for example, mission modules, but it takes four increments for those mission modules to meet minimum capability. So the things we are talking about what we know now does not meet minimum capability for the Navy. It will be 2017 and 2019 respectively before those increments are operationally tested.

So I think that is where I say you have to exercise prudence in how many ships and modules you approve before they have gone through that.

Ms. SPEIER. We are full speed ahead right now. That is what the NDAA [National Defense Authorization Act] recommends. That is not what you recommend. The Navy certainly recommends that. And I guess I want you to give us a road map on what we should do if we are going to do a diligent job on oversight over the next 2 years. What would you provide us as a road map?

Mr. FRANCIS. A couple of things. We mentioned the studies that we think the Navy should report back to you on on potential design changes. You should know that in the next—in this 2-year window; an approved program baseline for each of the increments of the mission modules. I don't think we can afford to—you know, as we have learned with the modules, if something doesn't work we have a different game plan; if this doesn't work, we have a different game plan.

I think you should be able to hold the Department accountable. You said you were going to do this this year and this this year, and hold them accountable for that. And I would take a real hard look at the 2016 block buy. If that is too many ships or takes you past operational testing, I think you have yielded a lot of your oversight authority. So that would be the outlines of what I would say.

Ms. SPEIER. Thank you. I yield back.

Mr. FORBES. Mr. Ribble is recognized for 5 minutes.

Mr. RIBBLE. Thank you, Mr. Chairman. And I want to especially thank you and ranking vice member, Vice Chair Courtney, for allowing me to come in.

I also want to thank the witnesses for being here today, especially the GAO. You know, oversight is an important part of what Congress does, and it is part of our responsibility to do this, but I would say as well that a lot of what I have read in the report is eerily similar to other reports on other shipbuilding programs. And so shipbuilding is a process, not just something that today we are going to do it, and tomorrow it is there and it is perfect. There is a process that goes on.

And the report that you gave on LCS is similar to those reports that GAO did in the 1970s, and other programs that became very successful in the 1990s, and another ship that became very successful. And so in one degree where I might take and have some disagreement with some of the findings in the report, I think the report is important, because it sharpens all of us. It helps us move forward and make improvements to the Navy response, Congress' response, and things go forward. So thank you for submitting the report and your testimony this morning.

Mr. Stackley, I appreciate you being here, and I would like to talk just a little bit about the cost of the ship and what a delay in production might do for that cost. It can either improve cost or delay it. LCS 1 cost the Federal taxpayers \$637 million, way, way above budget. However, the LCS 5 had dropped down to \$437 million, LCS 11 is at \$358 million, and LCS 15 at \$348 million, all trends going in the right direction; in fact, nearly a 50 percent reduction in cost over the course of the project.

What would a delay do to that?

Secretary STACKLEY. Yes, sir. The most critical aspect for any major weapon system program when it comes to cost is stability, stability requirements, stability of design and stability of funding. Any disruption to the production of the LCS, or any other major weapons system program for that matter, but more so in shipbuilding, you are going to suffer—first you are going to lose the capability that you are going after. You are going to suffer cost growth that starts in the vendor base, because the vendor base, which is a national vendor base, is going to be stopping production particularly on any unique components that are associated with that ship program, and then it is going to hit the shipyard itself where the workforce, the skilled workforce, that you are building up, in this particular case the LCS program, they are going to have to stop and start again, and you have to deal with hiring and firing cycles, green labor and things of that nature.

It is extraordinarily disruptive, and the unique case of shipbuilding where you are in a 4- or 5- and, in certain cases, carriers where get up into the 9-year range of when you start and complete construction, you have got to ensure stability of that production workforce going from ship to ship to ship, or you are just going to continue to suffer sawtooth in cost growth.

So that is one of the things we guard against, and the way we guard against it is to drive stability into the program. The LCS 1 and LCS 2, the front end of this program, absolutely not stable. The design was not complete, the requirements were moving, the production workforce was not ready, the government was not ready, and that is why you saw a \$637 million number at the start of the program.

We have worked to nail down all those aspects that bring stability, and then lock it in the long-term agreement associated with the block buy so that the vendor base, the shipbuilder and the government can all pull in the same direction to drive costs down to where we are now taking a ship that started off in the \$600–\$700 million range, and we are locked into a fixed-price contract at prices that are half of that years later.

Mr. RIBBLE. It is clearly going the right direction.

Admiral Hunt, the U.S. Navy has been at the forefront of national defense, well, since the beginning of the Navy. Thank you for your service and the work that you have been doing.

What impact would a delay have on the Navy's ability to meet its future requirements?

Admiral HUNT. The LCS will immediately provide capability forward. Initially it is one of getting out there and developing contact. It is the presence piece, which is essential from all the forward numbered fleet commanders' perspective. So we are out there de-

veloping relationships with allies, with countries that are deciding which camp to play in, and we are sending signals to those who could be adversaries.

So presence is first and foremost on what we do day in and day out. When you combine that with the capability that each of the mission modules bring, credible combat capability, a huge force multiplier that will immediately go into the calculus that those numbered fleet commanders will use in operating within their area of responsibility.

And I would make the point that each one of the first increments meets or exceeds current capability that we have in the United States Navy. So while it is true that some of them have up to four increments, and we are providing capability that we may not demonstrate fully until towards the end of this decade, that first increment that will be developed in the next year or so for all of those meets or exceeds everything we have, and that is an important piece that can't be overlooked.

Mr. RIBBLE. Thank you for your testimony.

Mr. Chairman, I yield back.

Mr. FRANCIS. Mr. Chairman.

Mr. FORBES. Yes, Mr. Francis.

Mr. FRANCIS. I think the things that Mr. Stackley said are true in terms of bringing the cost of the ship down, but, again, I think we have to remember it is a first-in-class ship of a new class of ships. So we have some questions on the mission modules, but, you know, even if you said the seaframes worked just the way they are supposed to and the modules worked the way that they are supposed to, we still have the operational concept. Is that going to work? Are we going to be able to do the maintenance concept the way we think of it?

The real question if I look in terms of cost risk, I think seaframes the least risk, modules are a higher risk, O&S [operations and support] costs are probably the biggest risk. So it is not just a first-in-class ship, it is a first in class of a new class and a new concept of operations. And we are in rate production, so the caution I would offer is the business imperatives for keeping things the way they are should not outweigh the programmatic and testing imperatives that will prove, can the ship work.

Mr. FORBES. We have been joined by ranking member Mr. McIntyre. He has graciously deferred his questions so Mr. Bonner can ask his at this time. So we recognize Mr. Bonner for 5 minutes.

Mr. BONNER. Thank you, Mr. Chairman. And as others have said, thank you for holding this hearing. And to our witnesses, thank you. I think it has been very enlightening, the questions have been thoughtful, and the responses have certainly been appropriate, I think, to help answer some of the questions about this very important program.

There have been several comments made by some of our colleagues, Mr. Chairman, and so I am going to try to ask one question of the admiral, and then I am going to let him answer it. But I am going to offer a quick observation before he does.

One of the comments was that it appears that LCS might be of little value to the Asia pivot strategy. So my question would be, what else does the Navy do in the South Pacific beside planning

on fighting big wars? I mean, are there not any other missions the Navy does? And you can think about that as I am opining about some other facts.

I mean, I am in the last few days of my tenure in Congress. I have worked up here for 18 years, I have served for 10 years, it has been the greatest honor of my life. One thing that I have been struck by is the fact that we really never know when we wake up what the day holds. And I certainly can't look into my crystal ball, I don't know if the GAO can. My father worked with the GAO when he was going to law school a long, long time ago, so I hold you in great respect. But I don't know that any of us are really that qualified to predict what the world's challenges are, but here are some facts.

There are 217,000 miles of inshore coastline, the littorals, around the world. Our Navy can't be every place, obviously, but only our Navy, only our military can provide the stability that the world needs. And it is hard for me to see, and I know the chairman has talked about the concern he has and many of us have about the decreasing number in the fleet. We have got, what, 285 ships today? I was with the former Navy Secretary a few weeks ago, who worked for President Reagan when we were shooting for a 600-fleet Navy.

My friend and colleague from California talked about comparison between the Ferrari and Lamborghini. I would say that the LCS isn't either, not compared to the cruisers, to the destroyers and other ships that we have which are also a vital part, but I would say it is probably more like a Malibu or a Taurus. It provides a function, especially in those inshore waters that perhaps we don't need the more expensive Lamborghini or Ferrari to provide that mission.

So I would be happy to now ask the question, and if the Admiral or any of the panelists to provide an answer.

Admiral HUNT. Congressman, thank you for that question. It is a very insightful one, and it speaks exactly to the way I think that the Navy over the next decade or two is going to contribute directly to our national defense.

The Navy does more than fight these wars. Ideally we will shape and understand an area that we are operating in to prevent the conflict. We do that by contact. We do that by contact with other nations. To have contact we must have presence.

Your comments on being out and about, I think, are exactly right. The influence that we have by having proportional capability with nations around the world is absolutely essential. That is how you develop the relationships, develop trust and confidence between the nations.

There is some question in the Western Pacific right now on the resolve of the United States. The presence of *Freedom* in Singapore is being used by Admiral Haney, our fleet commander in Pearl Harbor, and by Admiral Swift, the 7th Fleet commander out there, and they see great value.

The ship operates by exercises and by conducting operations with those national partners out there. And what we are getting in feedback is that it resonates with those potential partner nations, and

they see that as commitment of the United States to be in the region, and that contributes directly to increased stability.

So one of the key advantages that we get from LCS is the unit cost is low, the number of people manning them and still providing credible combat power is low, which is good for lifecycle costs, and the ability to operate at sea in the manning construct that we use of having two ships, three crews and rotating them gives us about 50 percent optempo [operational tempo], which is much higher than the standard one-third that we get. So for about 52 LCS, I get the equivalent presence of about 100 destroyer or cruiser ships. And I would offer that the smaller ship of the lower draft allows us to reach many of the places that we can't get in and develop that contact and relationship with others right now.

Vitally important, you can only do that if the nations you operate respect that credible combat power. That is what you get right now on that first increment of LCS surface warfare module. That is exactly what you will get with the MCM mission module, which is going to be hugely important and send a signal in the 5th Fleet area of responsibility, and I am confident we will see the same thing with the antisubmarine module.

Thank you, Congressman.

Mr. BONNER. Thank you, Mr. Chairman.

Mr. FORBES. And this committee would like to thank Mr. Bonner for his service. We know you will be leaving us soon and get to sleep in your bed more instead of traveling back and forth. But you have done a great job for your constituents and for your country, and we appreciate that service.

And we appreciate all the questions. I just have a few, and then Mr. McIntyre may have a few that he would like to wrap up with. And I come in a unique position, because I am not predisposed one way or the other. I want to try to make sure we are answering the questions.

I think my friend sitting to my right, Mr. Hunter, would probably suggest that—not that the LCS is not a good ship, but sometimes we get the impression it is like we walked into a department store, and we saw this wonderful thing, and we bought it, and we get home and say, now what do we do with it? You know, it can do so many different things.

And I think we heard today, we talk about presence, and that is a very valuable thing that we need to address. In fact, we had Admiral Roughead, who testified just yesterday, who talked about the importance of process as we make this shift. We have also heard Admiral Roughead talk about the enormous delays we have in being able to get anything deployed. From the concept to when we do it, sometimes that can be as much as 22 years. And this is not an infant. I mean, we have been dealing with LCS for over a decade, fair assessment, I think, Mr. Secretary.

Mr. Hunter raised a good question to just put on the table, Admiral. If we get into a major conflict—and that is what we have to constantly be recognizing; just as Mr. Bonner said, we don't always know what we end up with on any given day—presence may not be enough. I mean, we may need to look at capability there. And then again I think Mr. Francis at least raises a good question:

What happens if the operational testing comes in wrong, and we have already locked into making all of these purchases?

So I guess while what I would throw out to each of you to weigh in on is a couple of things. Number one, how do we strike that balance? Do we have the right balance?

And number two, has the Department done the analysis, not just to say what we can do with the LCS, I know it feels pretty comfortable with that, but what we really are going to need 10 years down the road, 15 years down the road. Because as you guys know, when we see these shipbuilding plans, they are fantasies because we are a billion dollars short of where we can build them, so we are not going to be able to build all those things.

And then particularly I would like you to laser in on the development schedule for the modules versus the seaframes, are we on track there? Do we need to kind of modify that? What sometimes we worry about is our schedules, they are going to create a situation where we deliver an immature mission module, because, you know, we have had some people raise the fact that by the time we get our mission modules, we might have used 25 percent of the whole life of some of these seaframes.

So could any of the three of you address those as you deem appropriate?

Secretary STACKLEY. Mr. Chairman, let me go ahead and get started and then allow Admiral Hunt and Mr. Francis to join.

First operational test risk. The entire strategy for LCS development seaframe plus mission modules is a risk-management approach where, by breaking down the mission modules into these increments, we are bringing to the fleet a capability that is today off the shelf, it is off the shelf. So the risk is not a technical, there is not discovery involved. What we are doing is we are integrating off-the-shelf capabilities onto a platform that was not designed as a truck, it was a truck—space, weight, power, cooling—to handle these mission modules. And it becomes an engineering issue associated with the details, those interfaces, and operating on and off the ship as opposed to an operational test risk where we are going to take a high-risk new system out and determine whether or not it works.

We know these systems are going to work. We know they are going to work. The 60 [SH-60] works today. It is the workhorse for the fleet. The remote mine-hunting system, we have demonstrated 800 hours of operational testing of that system, and so it is well beyond its mean time between failures that we were targeting for.

The AQS-20 Alpha sonar associated with the mine counter-measure mission package, that is a 20-year-old sonar. We know exactly how it works, and what we are doing is a preplan product improvement so that we can get it to the next level of capability.

The 30-millimeter gun works. It is on the LPD-17 class.

You write down the list of those systems that we are bringing in that first increment, the systems work. The risk is extremely well managed. We are working the engineering details of integrating those capabilities into that platform with the trained crew, and demonstrating its operational performance against those key performance parameters.

Mr. Francis is exactly right. We don't meet the final level of capability that we are targeting for the program until the fourth increment of mine countermeasures, third of the surface warfare, and really off the bat with ASW [antisubmarine warfare]. But those are planned, those are scheduled, and we are executing in accordance with those schedules except for the impact of sequestration, continuing resolution and budget reductions, which is putting our test program at risk, because when we pull that much money out of our test program, that slows us down, and we are having to try to recover gracefully from that.

Mr. FORBES. Let me let you take just a breath there. Just a minute. I want to come back to you, Admiral.

But, Mr. Francis, you have heard the Secretary's very logical, rational reasoning there. What was your response to that?

Mr. FRANCIS. I see things differently, Mr. Chairman. If we go through what we are learning on the mission modules, and let us just take mine countermeasures I was going through here, the sonar is an off-the-shelf system, but the shelf is a little dusty. The sonar has not been able to detect mines as we have expected. It has had some false positives. It needs preplanned product improvement. We have some operational work-arounds. The same is true for each of the four systems in that first increment. They haven't worked the way we thought. We also thought that the OASIS [Organic Airborne and Surface Influence Sweep] system was going to be able to be towed by the MH-60, and that has been scrapped.

I am not offering this up as, gee, this means the program is terrible, but it means we are learning as we go, and things may not work out the way that we thought.

On surface warfare, Mr. Hunter brought up the issue about the missile that gives that ship the stand-off range for the littorals. So that is the part we don't know yet. That is going to be a TBD [to be determined].

I don't think we can be confident that mission modules are going to do what they say they are going to do. And this is also developmental testing. This is very structured, benign environment testing, experts and maintainers from the contractors present. That is not what the operational concept is going to be.

So there is a reason that the law was created for operational testing. There is a reason there is a Director of Operational Testing Evaluation who reports to the Congress and the Secretary of Defense. So what is going on now is not a substitute for operational testing.

Mr. FORBES. Admiral, I know you love this program, and I say that in a good way, because you should. What is your response to Mr. Francis?

Admiral HUNT. Again, I thank you for the opportunity to respond here. Let me just walk through the different modules and give you my perception.

Again, with the surface warfare module as it exists right now, we do have the guns on there that are equal to the equivalent replacement platform if you look at it for a specific capability, which would be the FFG-7, *Oliver Hazard Perry* class. She additionally comes with an SH-60 Romeo armed helicopter. That provides us the reach and stand-off capability. And eventually we will be aug-

mented by the missile system when we replace NLOS. But providing the helicopter and providing the guns right now is greater capability than what we currently have, so I am very comfortable with that, and I think that will be used in a very good way, and it will continue to get better as we evolve.

The MCM [mine countermeasures] capability, we have had some reliability problems with the sonar. We are working our way through there. We plan on taking that IOC [initial operational capability] testing here in fiscal year 2015. And I think we will demonstrate that that gives us about twice the capability for hunting than we currently have on *Avenger* class.

That is very important as we kind of take a look at the CONOPS on how 5th Fleet and 7th Fleet would use this. It is hunting and avoiding in round 1; neutralizing probably in round 2, and only when you must. And the fact that we do this without putting the ship in the minefield greatly provides security to our sailors. So, again, I think we know how we are going to use that, and it provides value added.

For ASW, not only does it provide an excellent, excellent littoral in the shallower waters capability, the fact that we have this variable depth sonar so we can go below this layer and get better visibility into submarines, that will develop into a capability where the ship fights alongside the carrier strike group in different phases.

To Congressman Hunter's, you know, comments about how you would use this in a Western Pacific scenario, I would very much appreciate the opportunity, sir, to come back and at a classified level walk through that and give you some of the ideas that we are looking at. We are developing those; we continue to do that. Again, as I said, we are doing that war game right now today in Newport, Rhode Island. We will wrap that up on Friday. We continue to evolve that using the capabilities in different ways.

When you ask, is LCS going to work in the Western Pacific? Yes, I think the surface module works very, very well with what we have got in the initial evolution of a potential spark to warfare. The ASW platform will be good for being out and about should things go hot, and a very important thing in protecting the carrier and the amphibious ships. And the MCM capability that she provides may be at the wrap-up at the end. The fact that she can do all of those, understanding you have to time-sequence it, war is not an immediate overnight thing, it takes time, and that is part of the logistics aspect of tying it together in an effective way, and we are looking at doing that.

Mr. FORBES. Admiral, I don't want to speak for Mr. Hunter or for my good friend the ranking member, but I think at least all three of us would love to have not just that briefing, but I think the committee would love to have a briefing.

Mr. Secretary, I know that you are the guy that builds the ships once they tell you what we need to build, you know, but at some point in time we would love for the Department to come over and give us a laydown of this is what we think the risks are, this is why we need these capabilities, this is the projection, so we are looking at that in a holistic picture. What we want to make sure we are not doing is creating a strategy by acquisition. You know,

we want to make sure we have the strategy, and then we are getting what we need to to get.

And, Mr. Secretary, one criticism that has come forward is that we do have two designs. Those designs are moving in a similar path. I had the privilege of going out and seeing both of them back to back, near Mr. Hunter's home turf, and they are incredibly different. And when you ask both crews which one is best, needless to say, it is the one they are on. But then they said something unique: We may have to have a hybrid of the two. But I think what Mr. Francis would say, without putting words in his mouth, is that you are committing to buying all of this. At what point in time do we sit back and say, well, do we need some design changes on these vessels, and by the time we get to know what we need, have we already locked in to what we are going to buy?

So how are we protecting against that, Mr. Secretary, and do you see any proposed design changes that might be forthcoming?

Secretary STACKLEY. Yes, sir. We are capturing lessons learned, and we are looking at opportunities. Mr. Francis described studies that we are doing. In fact, as previously discussed, we are specifically looking at C4, command, control, communications, computer, and information systems, as well as the combat system, looking at individual elements, plus the command and decision system that rides on the network. Those are the principal areas.

In the specific case of LCS 1, we discuss the ship service diesel generators. We are looking real hard at the design that we have in place and making the upgrades to that design that are necessary to support the platform better.

So those evaluations are taking place. I described loading the combat management system onboard the LCS 2 variant with two other versions that are more common to the Navy. We are on that path. We are looking at the individual components associated with the combat system and just evaluating is this meeting our needs most effectively; are there other alternatives that we should consider; and if so, what is the cost, what is the benefit; and what would be the strategy for incorporating those without driving costs into the program?

Mr. FORBES. Mr. Secretary, would not Mr. Francis come back and say that was his point, that we are looking at these modification designs, but are we going to be locked in too far on our buy?

Mr. Francis, let me not put words in your mouth. What would your response to that be?

Mr. FRANCIS. I think that is a fair characterization, Mr. Chairman. So to these, I think these are changes to the existing designs that could be considered. Will they affect the learning curves that we have enjoyed on the current ships? There is, I think, the question, then, going forward in block 16, which could be flight 1 of the ship, if we are looking at the shipbuilding plan, the 30-year plan, it has lower quantities. Is that going to a single design, whether it be a hybrid design or one of the other two? That would be much more significant.

Mr. FORBES. Mr. McIntyre, do you have any questions that you would like to pose?

Mr. MCINTYRE. Thank you. I know our time is running short, and I will just ask quickly, and thank you for conducting this hearing.

Thank you, gentlemen, for your commitment to helping our U.S. Navy continue to be the best that it is; in fact, in the entire world.

Having been upon LCS 1, the USS *Freedom*, it is an impressive ship, very interesting, and obviously, with the capabilities that it has, something that we want to make sure that we continue to support.

I have a couple of quick questions. The Joint High Speed Vessel [JHSV] has been added to the LCS Council's purview. How are these programs related, and does this mean the Navy is considering adding the Joint High Speed Vessel to meet some of the LCS missions?

Admiral HUNT. The CNO made a decision to add the JHSV program to the LCS Council because he was impressed with, I think, the degree that we were digging into the program, finding new ways to improve it. He liked the process aspect of it. So he asked us to take a look at JHSV, one, because there is some commonality with LCS 2, where there may be some efficiencies; and then, two, take a look at what we could do with what I will call roll-on and tie-down capabilities to potentially enhance the capability of that platform to do other missions.

So you have got this group of folks that has been gathered and working LCS for almost a year now. With a lot of thought and different ideas, it is a quick adjustment to roll in another similar size, shape of a different mission ship and take a good hard look at that and see what are the opportunities, again, for efficiencies and, two, to utilize as comparable ways to interact with LCS, and there certainly are many. We could include that in maintenance packages or training packages afloat when we start operating the LCS in small groups forward.

So we are exploring things, a little programmatic change, a lot of research and idea, then to come back, be considered, and take it through the normal process that we have for any shipbuilding program.

Mr. MCINTYRE. How long is that evaluation going to take, do you think?

Admiral HUNT. It is open-ended. Right now we are kind of targeting having this thing wrapped in about a 6-month period, but I haven't been given a completion date by CNO.

Mr. MCINTYRE. Secondly, there have been a number of press reports referring to internal Navy studies questioning the combat capability of the LCS. I don't know if we quite hit that head-on today. And as we are wrapping up, maybe we ought to go in and hit it head-on so those questions don't linger.

What design and requirement changes to the LCS Council—is the LCS Council considering to address these concerns? I know you were touching some on that in answering Mr. Forbes' questions, but I just want to make sure there is nothing else out there. And what impact would these changes have on the seaframes themselves?

Secretary STACKLEY. Let me go ahead and take that one.

First off, both versions, installed combat systems, meet the requirements. And what we are doing is we are looking at alternatives to improve upon that, either improve upon that capability, or drive some further commonality with the broader fleet. So in that regard, we are specifically, as I described, looking at the communication suite. The LCS specification, we did not specify what communication suite to install onboard.

Com [communication] suites are volatile in terms of technology. The rate of change of technology out there for a communication suite insists that we are going to be continually upgrading these systems in the ship's life. And so we are taking a look at, okay, if we are going to be refreshing and upgrading the communication suite, then is there a point of incorporation where we take a more standard common suite in the Navy and then, when we upgrade, replace it with that standard suite? And, in fact, we are on that path.

And now when you talk about what is the impact, we are talking about cabinets in the—basically cabinets landing on foundations and potentially some antennas. We are going through what that means in terms of drawings, in terms of production, in terms of equipment procurement, so we will have both a cost and schedule assessment in that regard.

On the combat systems side, we are looking at a couple of areas. One is one of the principal batteries on the ship, which is in the self-defense system. Today LCS 1 and LCS 2, we have different systems that we are going to move to a common system, referred to as SeaRAM. It is basically a RAM [Rolling Airframe Missile] missile launcher mounted with a close-in weapons system radar system, gun mount, and that provides tremendous capability with minimal impact to the ship, but some price delta in terms of the cost of the equipment. Well worth the investment, and so we are committed to heading down that path. Otherwise we are taking a look at the different three-dimensional air search radars on board and assessing and comparing those to determine does it make sense to go to a common design in that arena.

Mr. MCINTYRE. Thank you, Mr. Secretary.

Thank you, Mr. Chairman.

Mr. FRANCIS. Mr. Chairman, can I offer one comment on that?

Mr. FORBES. Absolutely.

Mr. FRANCIS. One of the things we haven't talked about in design, and it is more, I would say, mundane than combat systems and so forth, is we have added 20 berths, I believe, to this ship. To be determined, then, is how to do the habitability requirements that go with it, you know, the water, the food, the storage and so forth, if you are going to house that many more sailors. That could have design implications because of the space limitations on the ship. So not as glamorous, but something that would have to be looked at.

Secretary STACKLEY. And I would just counter, this isn't point/counterpoint, but we added the bunks with a clear view on what the capacity was of the installed capacity for habitability on the ship, because to go beyond that, in fact we would be looking at extra chill boxes, extra stowage for the crew gear and things of this nature. So we believe right now we have it about balanced, and if

we go beyond that, in fact, we are going to have to take a look at the installed habitability.

Mr. FORBES. And it is not point/counterpoint, but it is question and answer, and we appreciate you guys doing that.

I want to come back to what I started with and to say that I have absolutely no problem that we don't all agree on this. I think that is the strength of our Navy and the strength of our way of government, that we can ask these questions and get answers. I want to compliment all three of you for your professionalism, the teams that work with you, and for your ability to come in here and give us information. You know, we don't always get that. You all have been wonderful throughout this in answering the tough questions.

The other thing I want to say is I have incredible admiration for my friend Mr. Larsen, but I disagree a little bit with the fact that I don't want to read any more about this book. I want to read about this book for years to come, I want to read about the stories of how the LCS saved lives and defended this country, and that is why we are doing this, because sometimes the first few chapters are the heavy reading you have got to get through, and that is what we are all working through now, to make sure that we have a happy ending to this saga as it goes forward.

And the other thing is while we believe in this program, we don't want to wake up and have half our Navy LCSs. You know, I think none of us want that. We want to make sure we get the right mix, the right balance as we do it.

So I want to thank all of you. I told you at the beginning, also, I want to give you the final wrap-up of anything you think we didn't cover that we should have, any comments that you think were misconstrued. This is your chance. And, Admiral, if we can start with you, because that is where we started our hearing, love to give you the last word, and then we will go right on down the line.

Admiral HUNT. Well, thank you, Mr. Chairman. I appreciate the opportunity.

Again, I think we have covered most of the points that I wanted to get in there, but I would tell you, this is the capability that we need forward. We need numbers, and we need presence out there. The capability that we have in the existing mission modules and those that are quickly to follow, to include the MCM, is one that is vitally necessary, and it will be used. And our forward fleet commanders are planning on using this capability in a very important way.

I feel confident that the hulls themselves are going to be a great platform in which different payloads, the mission modules, will hopefully continue to evolve for the life of the ship. As Mr. Stackley has pointed out, most of the components that go into mission modules are from other existing programs and have proven capability. It is a matter of tying them together now and making sure that we can operate them in a proper way. To really demonstrate that, I want to get them forward in the waters that they are going to operate. That is hugely important to those of us that sail ships, and we are ready to do that.

We are going to deliver a good product. I am very confident in the program, the leadership that we have, and I really appreciate the opportunity to be here, Congressman. Thank you, sir.

Mr. FORBES. Thank you, Admiral.

Mr. Secretary.

Secretary STACKLEY. Yes, sir, just a few comments.

Clearly the program had missteps at the front end of the program, clearly. But the objective was well placed, and we have spent time and effort, the Department plus the Congress, to get the program back on the right track, and we believe that that is where we are. We believe that the performance continues to improve on the program, and while we have different assessments of risk that remains, we believe, in fact, we have got a good risk-mitigation plan in place.

The GAO has raised some critical questions, as I described earlier. Rather than answer those in short statements, what we owe you and we commit to you is to come back and go through in detail what our plan is, why we believe it makes sense, and look for your continued support.

And finally, I will end where I started, which is today we are at 286 ships. The requirement is 306 ships. We don't get there without completing this program. It is the most affordable ship in the Navy. It does deliver capability; not simply capability that we need near term, far term, but filling critical gaps that today place vulnerabilities in terms of our ability to perform our mission around the world. And so we hold this as a priority inside of our shipbuilding program, and we are committed to executing and retiring those risks that we have discussed today.

Mr. FORBES. Good, and thank you, Mr. Secretary.

Mr. Francis, I think you would probably say ditto to everything they said, and then you would say but, and we are going to let you do the wrap-up.

Mr. FRANCIS. Thank you, Mr. Chairman. It has been a pleasure to be involved in the discussion, and I think, as you know, while we have differences, I really respect what Mr. Stackley and Admiral Hunt are doing. And I think we are all interested in the ship reaching its full potential, so we are all part of the same government.

I would say, you know, to pick up on Mr. Stackley's metaphor, if the program is on track, that is good, but we don't want it to be on rails that we can't make adjustments that we may have to make in the future.

And I just end on the note, let us not forget about the maintenance concept. You know, in other programs, other ships, aircraft, if the components aren't as reliable, they need more maintenance, need more spares, you can overpower that situation with more assets. But LCS will have an austere crew. It is not going to have a lot of space for spares on the ship. It has to be reliant on offshore support for the ship to stay operational. So there is no real plan B there, and let us just keep that in mind as we go forward. I think working out that maintenance concept and making sure that crew can handle that ship and keep it operational that far away from its log [logistical] support, very important.

Mr. FORBES. We thank you for your questions you raise, valid good questions; Admiral, for your passion for this program. Mr. Secretary, thank you for your commitment to say you are going to come back and give us those responses so that we make sure the program is going in the direction that we need to go.

And with that, Mr. McIntyre, if you don't have any other comments—

Mr. MCINTYRE. No.

Mr. FORBES [continuing]. Then we are adjourned. Thank you all very much.

[Whereupon, at 12:35 p.m., the subcommittee was adjourned.]



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**A P P E N D I X**

JULY 25, 2013

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**PREPARED STATEMENTS SUBMITTED FOR THE RECORD**

JULY 25, 2013

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**Statement of Congressman J. Randy Forbes**  
**Chairman, Subcommittee on Seapower and Projection Forces**  
*Acquisition and Development Challenges Associated with the*  
*Littoral Combat Ship*  
**July 25, 2013**

I want to welcome all of our members and our distinguished panel of experts to today's hearing, that will focus on the acquisition and development challenges associated with the Littoral Combat Ship.

Concurrent with our hearing this morning, the Government Accountability Office released a report entitled "Significant Investments in the Littoral Combat Ship Continue Amid Substantial Unknowns about Capabilities, Use and Cost". In this report, GAO expresses concern about the design stability of the platform and concern about the program goals of the mission modules. Until these issues are clarified, GAO has recommended Congress consider "restricting future funding to the program for the construction of additional seaframes" until certain conditions are met.

This is not the first time that we have received reports critical of the LCS program. The "Perez report" was a report commissioned by the Vice Chief of Naval Operations to assess and review the Navy readiness to receive, employ and deploy the Littoral Combat Ship. This report, conducted in early 2012, was also critical of the LCS program both in terms of concepts and implementation. Specific concerns included in this report include the concept of operations, manning, maintenance, modularity, Mission Package capability, training, and commonality were identified.

The Director, Operational Testing and Evaluation has also expressed concerns about the survivability of the Littoral Combat Ship and indicated that LCS 1 is "not expected to be survivable" in combat and unable to "maintain mission capability after taking a significant hit in a hostile combat environment." The testing program associated with this first of class is also lagging.

I would be remiss if I did not mention the engineering casualties that LCS 1 is encountering during the deployment to Singapore. While expected in the first of class, the sheer number of casualties associated with LCS 1 is troubling and needs to be quickly addressed.

In a time of reducing resources, the Navy is planning to even more heavily rely on this lower cost alternative. I believe it is incumbent on this subcommittee to ensure that we have the most capable, lower cost alternative that is relevant to the combatant commanders in time of conflict.

I also believe that criticism of the LCS program is warranted. From this most recent GAO report, to the Perez report and even the DOT&E assessment, they all provide an alternative view as to how to best manage the acquisition and development of this effort. But let me emphasize that none of these reports disputes the necessity to rapidly field the capabilities proposed by the Littoral Combat Ship. I look forward to doing my part to make sure that we methodically and expeditiously field the right LCS capability to the fleet in the years ahead.

Today we are honored to have as our witnesses:

the Assistant Secretary of the Navy for Research, Development and Acquisition, Honorable Sean Stackley;

the Director of the Navy Staff and the Chairman of the Littoral Combat Ship Council Vice Admiral Richard Hunt; and

the Managing Director of Acquisition and Sourcing Management, Government Accountability Office, Mr Paul Francis. Gentlemen, thank you all for being here.

I could not think of a better panel to assist our subcommittee in reviewing this issue. I hope that at the end of this hearing that we will be best able to provide a firm direction as to the path forward with the LCS program.

I now recognize the Ranking Member, Mr. McIntyre, the distinguished gentleman from North Carolina, for any remarks he may have.

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BY THE HOUSE ARMED SERVICES  
COMMITTEE  
SUBCOMMITTEE ON SEAPOWER &  
PROJECTION FORCES

STATEMENT

OF

THE HONORABLE SEAN J. STACKLEY  
ASSISTANT SECRETARY OF THE NAVY  
(RESEARCH, DEVELOPMENT AND ACQUISITION)

AND

VADM RICHARD HUNT  
DIRECTOR, NAVY STAFF

BEFORE THE

SUBCOMMITTEE ON SEAPOWER & PROJECTION FORCES

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF THE NAVY SHIPBUILDING PROGRAMS

DATE: JULY 25, 2013

NOT FOR PUBLICATION UNTIL RELEASED BY THE  
HOUSE ARMED SERVICES COMMITTEE  
SUBCOMMITTEE ON SEAPOWER & PROJECTION FORCES

Mr. Chairman, distinguished members of the Subcommittee, thank you for the opportunity to appear before you and discuss the current status of the Littoral Combat Ship (LCS) program, specifically to discuss the overall concept, the process of how the program is being executed and the chance to provide the current status on both the LCS Seaframes and Mission Package procurement.

First, the Navy would like to thank the Subcommittee for its continued interest in naval shipbuilding and the LCS program. In particular, the Navy appreciates the opportunity to provide the Services' assessment of the various issues raised of late as well as provide an update on the tremendous progress we have made in the program over the last few years.

### **Introduction**

As you know, the LCS program is of critical importance to our Navy. With its great speed and interchangeable modules, the ship will provide unprecedented warfighting flexibility. LCS is one of the cornerstones of the future Navy, and provides critical capability to the fleet. This fast, agile, focused-mission platform is designed for operation in near-shore environments, yet is capable of open-ocean operation. It is designed to defeat asymmetric "anti-access" threats such as mines, quiet diesel submarines and fast surface craft. The modular design integrated into a completely functional weapon system promises to deliver a warship class that will be effective, and allow LCS to be tailored specifically for the mission at hand – flexible solutions delivering needed capabilities to ever evolving threats.

These ships expand the battle space by complementing our inherent blue water capability and filling war fighting gaps in the littorals and strategic choke points around the world. LCS design characteristics (speed, agility, shallow draft, payload capacity, reconfigurable mission spaces, air/water craft capabilities) combined with its core C4I, sensors, and weapons systems make it an ideal platform for engaging in Maritime Security Operations. Each ship has been designed in accordance with overarching objectives for reducing total ownership cost, which is also critical in the current budget environment.

**Concept**

The LCS's originally envisioned concept of operations called for the ship to perform littoral anti-surface warfare (SUW) against small boats and craft, antisubmarine warfare (ASW) against diesel submarines operating in shallow littoral waters, mine countermeasures (MCM), and a range of inherent "mobility related" missions in peacetime. The ships were envisioned to be modular and reconfigurable, each capable of performing SUW, ASW, and MCM. The seaframes would serve as a platform for mission packages that could be changed, modified, or removed in a short period of time.

Since the original vision, the concept remains unchanged as does the modular strategy that delivers cost effective capability to the Fleet. The LCS program comprises two variants of the seaframe and three mission packages, each employing incremental fielding strategies. The two seaframe variants (commonly referred to by the respective lead ship names, FREEDOM and INDEPENDENCE) each meet the requirements established within the program's Capability Development Document (CDD). Through the construction and lessons learned associated with the first of class, each has achieved the degree of stability and maturity necessary to ensure efficient production of follow ships. Perhaps most importantly, by virtue of sustaining two production lines, the Navy has successfully employed competition in this program to such extent that the unit cost in production is being steadily reduced. At roughly one-third the unit cost of our large surface combatant program, the competitive dual sourcing strategy for LCS has provided the Navy with a viable approach to affordably increasing our force while also addressing warfighting gaps.

The modular strategy for mission packages is a breakthrough concept for delivering cost effective capability by employing mature technologies to meet today's warfighting requirements while also providing tremendous flexibility to rapidly employ developing technologies to counter emerging threats or otherwise close gaps today, and in the future. The Navy has initially selected three mission packages for the LCS program: Mine Countermeasures, Anti-Surface Warfare, and Anti-Submarine Warfare. In order to deliver these capabilities in the capacity needed, and with an eye on controlling cost and risk, the Navy is employing an incremental fielding strategy wherein the first increment leverages mature technologies and existing programs of record to provide a level of performance exceeding that available in the fleet today. Subsequent

increments of the mission packages will further augment this capability and capacity by introducing developing technologies and systems which will largely fill gaps in today's warfighting capabilities. It is the Navy's intent to deploy both FREEDOM and INDEPENDENCE variants with Increment 1 mission packages when each ship of the LCS program is ready to deploy. Later deploying ships will be equipped with subsequent mission package increments as their respective developing technologies are fielded.

### **Process**

The entire LCS program, as defined by the Joint Requirements Oversight Council (JROC)-approved LCS Flight 0+ Capability Development Document (CDD), defines the ends state requirements for the mission package increments as well as the requirements for the seaframe. Both seaframe variants are designed to meet the CDD specified requirements and support all three types of mission packages. Each variant is built to be compliant with the LCS Interface Control Document (ICD), which governs the interface between the ship and any current or future mission package. This incremental approach minimizes concurrency risk while allowing the flexibility which the modular concept provides. The nine mission package "increments" (4 MCM, 4 SUW, 1 ASW) represent time-phased fielding of capability aboard both variants of LCS seaframes. This time phased-fielding of capability is fundamental as it allows the Navy to rapidly field systems as they are matured instead of waiting for the final capability delivery. The major systems that comprise mission packages are already established as individual programs, with their own Acquisition Program Baselines (APBs) including cost, schedule and performance objectives and thresholds. One APB for the entire mission package program, which integrates these programs for LCS, is appropriate and compliant with law, regulation, and policy. The APB will include well-defined, quantitative cost, schedule and performance thresholds and objectives for the mission packages. In accordance with the CDD and the incremental approach, these targets will be met through the final, time-phased capabilities fielded for the MCM, SUW, and ASW mission packages. This is similar to the approach used for other programs which provide time-phased capability for platforms. The time-phased fielding of capability and the associated performance metrics to conduct testing against will be defined in the Capability Production Documents currently under development for each mission package.

Future seaframe contract awards will be predicated on meeting seaframe requirements, including the requirement to embark any ICD compliant mission package, in the most cost effective way. As the Navy prepares for the next procurement of ships, developmental and operational testing of the capabilities of each seaframe variant and associated mission package is being conducted and the results will be used to inform future program decisions. In addition, the Navy will have return cost data from the initial ships of the block buy to further inform the Fiscal Year (FY) 2016 procurement. The Defense Acquisition Board, chaired by USD(AT&L), will review the next seaframe procurement prior to Request for Proposal (RFP) release. The Navy, in conjunction with USD(AT&L), will execute the normal, rigorous process to ensure that the procurement meets with the specified requirements and that the costs are well understood.

As the Navy continues to build LCS seaframes, the LCS mission package procurements are phased to meet the number of LCS Seaframes. To keep pace with the LCS seaframes currently under contract or remaining under the current block buy through Fiscal Year (FY) 2015, the Navy must procure mission package at a rate necessary to support, 1) developmental and initial operational test and evaluation of the two LCS variants, 2) developmental and operational testing of each incremental mission package capability as it is integrated and fielded, 3) Fleet crew training needs, and 4) operational LCS units with the tailored capabilities required for seaframe deployments. It is important to note that it is not a one-to-one ratio of mission package to LCS Seaframes. In FY 2014 for example, there will be four seaframes delivered to the fleet with a total of 10 mission packages (5 MCM and 5 SUW) delivered and available for use. The additional mission packages will support not only operational deployments, but account for the additional needs of training, and maintenance as well as developmental and operational testing.

#### **Progress**

Affordability remains a key factor in acquiring the needed future capacity of these highly flexible and capable ships. The Navy remains on course to deliver these seaframes in the quantities needed through the execution of the two competitive block buy contracts (for 10 seaframes of each version) awarded in FY 2010. The average cost of both LCS variants – including basic construction, Government Furnished Equipment (GFE), and change orders – across the 10-seaframe procurement over the five year period falls under the Congressionally-mandated cost

cap of \$480 million per seaframe (FY 2009 dollars). The dual block buy award strategy afforded the Navy an opportunity to award up to 20 seaframes between FY 2010 and 2015 under fixed-price type contracts resulting in a savings of \$2.9 billion.

The dual award strategy also stabilized the LCS program and its associated industrial base, increased the seaframe procurement rate to support operational requirements, promoted efficiency in the industrial base from the vendors to system providers to the shipyards, while sustaining competition, and provided potential Foreign Military Sales opportunities. The Navy is also aggressively pursuing commonality between the two variants, with particular focus on weapon systems, sensors, and C4I equipment. There are several on-going studies that will identify non-recurring integration costs, insertion points, and total ownership costs in order to assess the optimal insertion points.

LCS capabilities address specific and validated capability gaps in Surface Warfare, Mine Countermeasures, and Anti-Submarine Warfare. The concept of operations and design specifications for LCS were developed to meet these gaps with focused mission packages that deploy manned and unmanned vehicles to execute a variety of missions. Three (3) Mine-Countermeasure (MCM) mission packages, four (4) Surface Warfare (SUW) mission packages have been delivered. The Surface Warfare and Anti-Submarine Warfare mission packages remain on schedule to reach Initial Operational Capability (IOC) in FY 2014 and FY 2016, respectively. Sequestration, combined with recent Congressional marks and rescissions, will impact the operational test schedule for the Mine Countermeasures mission package. The Navy is working to minimize this impact and will advise the defense committees of any changes to meeting the IOC date for this essential capability. The FY 2014 President's Budget requests approximately \$347 million in Research and Development and Other Procurement funding for continued development of mission packages, procurement of common mission module equipment and procurement of four mission packages. The Navy will continue to incrementally field additional mission package capabilities to the Fleet as they mature.

#### **Seaframe and Module Package Status**

To date, the Navy has delivered USS FREEDOM (LCS 1), USS INDEPENDENCE (LCS 2) and USS FORT WORTH (LCS 3). CORONADO (LCS 4) will deliver this Fall. LCS 1 is currently

deployed with the Surface Warfare (SUW) mission package and will have more than a year of operational performance demonstrating the integration of the LCS seaframe and SUW mission package. LCS 1 is currently on deployment to Singapore and has completed two key events, IMDEX (International Maritime Defense Exhibition) and CARAT (Cooperation Afloat Readiness and Training) Malaysia, with CARAT Singapore, SEACAT (Southeast Asia Cooperation and Training), regional TSC (Theater Security Cooperation) port visits and Fleet-directed operations still planned for the remainder of the deployment.

The Navy is already constructing lessons learned from the Singapore deployment which will be applied to LCS 3 as she prepares for a deployment that is planned for the fourth quarter of FY 2013. While only three months into the Western Pacific deployment, valuable data with regard to optimal manning and the maintenance balance between ship's force and shore support is being gathered, and repair coordination, logistics, and communications between all commands from San Diego to Singapore have already been refined with continual gains in efficiency. LCS 2 has been the test platform conducting extensive testing of the integration of the Mine Countermeasure (MCM) mission package. The linchpin of the MCM package, the Remote Multi-Mission Vehicle (RMMV) now has over 850 hours of Reliability Growth Program over the span of 47 missions and 5 months, which has shown Mean Time Between Operational Mission Failure substantially exceeding requirements. Overall the Navy will have procured 13 mission packages, seven of which will have delivered by the end of FY 2013. As stated previously, these mission packages are required to complete development of the mission package capabilities as well as to support operational testing. LCS 3 is in the process of wrapping up its' post delivery period as the seaframe will complete Post Shakedown Availability (PSA) in July of 2013. She will officially transition to the fleet in the fall of 2013.

Commonality between the variants has been a focus of the program over the last two years. The Navy plans to incorporate Navy C4I programs of record instead of contractor furnished equipment into the hulls. Specific examples include ADNS Increment III, Navy Multiband Terminal (NMT), Common Data Link Management System (CDLMS), and Digital Modular Radio (DMR). The program is also assessing options and cost to implement a common network across both variants including the ability to transition to a common combat management system.

While many of these initiatives may be greatly affected by the current budget environment, the Navy continues planning to implement these improvements to the program.

#### **LCS Council**

In August 2012, the Chief of Naval Operations (CNO) established the Littoral Combat Ship (LCS) Council with 3-star flag officer membership from requirements, acquisition, and Fleet stakeholders with the objective of driving actions and coordinating all administrative control responsibilities for the LCS Class to ensure LCS is ready to meet its assigned missions.

Fundamentally, the Council was constituted and empowered to bridge “gaps and seams” that may exist or arise between various stakeholders, warfare and mission communities and, supporting activities across the requirements, acquisition, and Fleet enterprise to ensure the successful procurement, development, manning, training, sustainment and operational employment of the LCS Class ships, their associated Mission Packages, and shore infrastructure.

#### **Fleet Introduction and Sustainment**

Sustainment planning for the LCS Class began early in the Ship Program’s design and development phases. As the program evolved and ships began to deliver, a separate program office was created for LCS Fleet Introduction and Sustainment. This office applies feedback from the ships’ crews, the Littoral Combat Ship Squadron (LCSRON), Fleet input, Board of Inspection and Survey (INSURV) reports, and recommendations and direction from senior navy officials, including the LCS Council to continually address strategies and procedures for manning, training, maintenance, and supply support, based on operations of the ships as they enter service.

The program office’s sustainment approach ensures execution of the CONOPS – The United States Fleet Forces Command (USFFC) maintains a robust “Platform Wholeness” Concept of Operations (CONOPS) to delineate requirements and assign responsibilities for all aspects of LCS support to achieve “platform wholeness.” This designation includes the full range of manpower, training, logistics; maintenance and shore support to establish the ship in the Fleet, sustain it, and ensure its readiness over the Class life cycle. Lessons learned, from the operation

and support of the first ships of the class, are being incorporated into LCS platform strategies and practices, ensuring continued refinement.

Due to its limited crew size, LCS operates under a unique maintenance concept. Currently, the prime ship design and shipbuilding contractors manage ship maintenance under Interim Support Plans (ISPs), which are elements of the shipbuilding contracts. The ISP is a post-delivery maintenance and sustainment contract vehicle providing contractor-led LCS maintenance support while collecting data for future sustainment planning and contracts. The ISP includes contractor-provided facilities and Preventive Maintenance (PM), as well as engineering support for LCS unique systems.

The LCS maintenance organization structure consists of two major elements: Ship and Mission Packages. The Squadron-led Maintenance Support Team (MST) manages ship maintenance and the Regional Maintenance Centers (RMCs) manage ISP execution. The MST consists of Sailors and Navy program office personnel who manage the Current Ship's Maintenance Project (CSMP), ISP Facilities Maintenance (FM)/PM scheduling, Casualty Reports (CASREPs) and reach-back to maintenance providers. The RMC manages Intermediate Level (I-Level) maintenance, contracting and oversight of Depot Level (D-Level) maintenance (including maintenance covered by the ISP). The ISP contractors perform selected Organizational Level (O-Level) maintenance.

As a follow-on to the ISPs, the Program Office will use organic and contracted support via Sustainment Execution Contracts and Planning Yard Services Contracts. The program office has issued two RFPs for these efforts and will award them in FY 14. These two vehicles will form the crux of the planning and sustainment requirements necessary to ensure the Class' success and lifecycle expectations.

As intended and designed, Littoral Combat Ship's reduced manning and rotational crew construct, combined with enhanced training and shore support, reduces manpower cost and provides greater presence than current surface combatants. The rotational crewing concept for LCS is three crews for every two ships – with one deployed. The CDD Key Performance Parameter (KPP) for core crew manning is (Threshold: 50; Objective: 40). Ongoing studies are considering revision to the rotational crewing concept.

Reduced manning is enabled by shipboard automation, robust training and transitioning many administrative and maintenance functions ashore, relying on distance support. Enabling automated systems include fire detection and suppression systems, automated engine room and engineering controls, enhanced Condition Based Maintenance (CBM) systems for selected critical equipment and electronic navigation systems. The primary shore support facilities for LCS are the LCS Training Facility (LTF) and the Mission Package Support Facility (MPSF).

LCS is employing a new training strategy that supports a “Train to Qualify” (T2Q) KPP. T2Q dictates that an individual reports to the ship ready to stand watch and perform all assigned duties. The strategy applies high fidelity shore-based trainers and simulators to support training requirements for both hull variants. A mixture of shore-based trainers, simulators, at-sea training and certification opportunities ensure the proficiency of follow-on crews. Qualifications and certifications are monitored and refreshed during off-hull training periods using repeatable measures, metrics and standards. This will enable crews to retain high levels of qualification.

The LCS Program is continually addressing strategies and procedures for manning, training, maintenance, and supply support, based on operations of the ships as they enter service. The LCS Program will apply feedback from the ships’ crews, the LCSRON, Fleet input, INSURV reports, and recommendations and direction from senior navy officials, including the LCS Council. As sustainment procedures evolve, changes will be reflected in future revisions to this Life Cycle Sustainment Plan (LCSP).

#### **Fleet Perspective**

The Littoral Combat Ship and its embarked Mission Packages bring needed capabilities to our Navy. The present surface fleet of Frigates, Destroyers and Cruisers provide Navy an ability to reach into all four corners of the globe. Littoral Combat Ships, with their speed, shallow draft, modular architecture and the ability to contest the inshore environment or near-land battlespace will take that global reach even further.

Our primary combatants of destroyers, cruisers, submarines and aircraft carriers are essential to the defense of our nation. During times of heightened tension, the presence of a United States naval vessel off the shores of an allied nation can reassure, while also sending a strong message

to would-be belligerent actors. Continuous forward presence can also be very expensive and not necessarily essential all the time as we continually balance asset demand against available resources. This is where the Littoral Combat Ship fits perfectly into our future engagement strategy – affordable, focused, and tailored combat capability.

Our multi-mission AEGIS destroyers and cruisers are technological marvels that are manned, trained, and equipped to fight multi-threat, open ocean major combat operations. The Littoral Combat Ship is a more affordable and equally effective alternative for missions that do not require a multi-mission, billion dollar-plus warship. Further, Littoral Combat Ships will allow the *Arleigh Burke* class destroyer and *Ticonderoga* class cruiser to focus on the high-end missions they are designed to execute. As an example, for the acquisition and operating price of a single destroyer manned with 300 Sailors, Navy will be able to deploy four Littoral Combat Ships, able to operate together as a coordinated surface action group, or sent to the four corners of a region to maximize forward presence. The Littoral Combat Ship will be able to maintain a persistent presence, while U.S.-based cruisers and destroyers will only spend a fraction of their service life deployed overseas. From forward operating bases, LCS will be able to engage our partners and work with our allies consistently. Further, when called upon in crises, LCS have the ability to get to contested areas without requiring open ocean, heavy lift transport, providing a stronger and persistent presence of United States' interest in the region.

The Littoral Combat Ship Program, which pairs a ship with a modular mission package, is a ship that can serve a multitude of roles. The modular concept and interface design between the ships and mission packages offer the opportunity for the incremental delivery of improved capabilities. While Navy describes the mission package program in terms of defined increments, each mission package will continue to develop and deliver improvement, well beyond the current capabilities that are presently in the Fleet.

By having the flexibility to swap out mission packages, Navy has a ship that can adapt to meet the ever-changing spectrum of mission requirements.

Procuring the Littoral Combat Ship means Navy does not have to continue to sustain the aging *Avenger* class Mine Countermeasure ships. Instead, the Mine Countermeasure mission package can be loaded into the Littoral Combat Ships as required. Then, when needed, the same Littoral

Combat Ship could embark an Anti-Submarine Warfare mission package in order to search for submarines or embark a Surface Warfare mission package to conduct surface warfare missions. The ship's reconfigurable and modular mission packages are tailored to meet the requirements of specific warfare areas, meaning Navy is getting the capability of more than one ship with each Littoral Combat Ship procured.

In the 3:2:1 manning model, three crews rotate between two Littoral Combat Ships, with one ship forward operating around the globe. Under this concept, with 52 Littoral Combat Ships, Navy will be able to continually forward-operate 26 Littoral Combat Ships. In the current deployment model for single-crewed cruisers, destroyers and frigates, it would take more than one hundred ships to maintain the equivalent level of presence of 52 Littoral Combat Ships. The Littoral Combat Ships remains an economical method to address warfighting capability gaps while providing sizable global forward presence.

USS FREEDOM (LCS 1) and USS INDEPENDENCE (LCS 2) were constructed and delivered using Research & Development dollars and resulted in two competing ship designs. Navy's intent is to take the knowledge gained in the build, test, and operation of these first ships to inform future program changes. This is why USS FREEDOM's deployment to the Southeast Asian Pacific Region was essential to take the first step in the executing the concept of LCS persistent forward operations.

Navy remains committed to delivering and sustaining warships that are operationally ready, combat effective and cost efficient. Since its inception, an emphasis has been placed on the affordability of the program from the construction cost of the ship itself to the minimal manning construct to reduce the life-cycle costs of operating the ships. The Littoral Combat Ship is the affordable means to maintain a strong naval fleet.

In the challenging fiscal environment our nation faces today—with sequestration enacted and the Department of Defense budget shrinking—the Littoral Combat Ship is a prudent investment where Navy is getting more than its money's worth. The Littoral Combat Ship is a 3,000 ton warship that is being operated with a crew of fewer than 100 sailors at 1/3 the cost of a destroyer, 1/4 the cost of an attack submarine, and 1/30 the cost of an aircraft carrier. The Fiscal Year 2014 average target cost per ship is approximately \$340M.

The Littoral Combat Ship is a critical component to our surface fleet. The ships will be able to sail into ports too shallow for cruisers and destroyers and they will show the United States flag in places where our ships have never been before. The Littoral Combat Ship provides much-needed capability to the United States Navy.

#### **Summary**

Moving forward the Navy plans on continuing to leverage the modular strategy for the LCS program. The modular strategy is a breakthrough concept for delivering cost effective capability by employing mature technologies to meet today's warfighting requirements while also providing tremendous flexibility to rapidly employ developing technologies to counter emerging threats or otherwise close gaps today, and in the future. The Navy plans on procuring 52 LCS seaframes in accordance with the most recent long range shipbuilding plan while balancing available funding with achieving the lowest possible pricing to the government. The Navy plans to continue to procure LCS seaframes through the remainder of the Block Buy in FY 2015 and the start of the next procurement in FY 2016. The Navy plans to procure LCS seaframes in accordance with the most recent long range shipbuilding plan while balancing available funding with achieving the lowest possible pricing to the government. The future acquisition decisions will be informed with an up-to-date Service Cost Position and "should cost" assessment. The Defense Acquisition Executive will determine whether a new OSD Cost Analysis and Program Evaluation (CAPE) Independent Cost Estimate (ICE) will be needed to inform the decision. Contracts for ships in FY 2016 and beyond will be informed by actual cost returns, not estimates, for eight delivered seaframes and an additional 16 seaframes under contract, but not delivered by FY 2016. The Joint Staff, along with the Navy staff, plans to conduct a requirements assessment study which will serve as a revalidation of the LCS capabilities definition document. No changes to LCS seaframe requirements are envisioned in the near term as both LCS classes meet Navy requirements. No changes are planned for LCS mission packages that will affect near-term testing or fielding of mission package systems.

We thank you for your continued support of the Navy and Marine Corps as well as the LCS Program. With your continued support, you will help the Navy deliver not only an affordable, but highly capable and flexible warship to the Fleet and our Nation.

**Assistant Secretary of the Navy  
(Research, Development and Acquisition)**

**7/28/2008 - Present**

**The Honorable Sean J. Stackley**

Sean J. Stackley assumed the duties of assistant secretary of the Navy (ASN) (Research, Development & Acquisition (RDA)) following his confirmation by the Senate in July 2008. As the Navy's acquisition executive, Mr. Stackley is responsible for the research, development and acquisition of Navy and Marine Corps platforms and warfare systems which includes oversight of more than 100,000 people and an annual budget in excess of \$50 billion.

Prior to his appointment to ASN (RDA), Mr. Stackley served as a professional staff member of the Senate Armed Services Committee. During his tenure with the Committee, he was responsible for overseeing Navy and Marine Corps programs, U.S. Transportation Command matters and related policy for the Seapower Subcommittee. He also advised on Navy and Marine Corps operations & maintenance, science & technology and acquisition policy.

Mr. Stackley began his career as a Navy surface warfare officer, serving in engineering and combat systems assignments aboard USS *John Young* (DD 973). Upon completing his warfare qualifications, he was designated as an engineering duty officer and served in a series of industrial, fleet, program office and headquarters assignments in ship design and construction, maintenance, logistics and acquisition policy.

From 2001 to 2005, Mr. Stackley served as the Navy's LPD 17 program manager, with responsibility for all aspects of procurement for this major ship program. Having served earlier in his career as production officer for the USS *Arleigh Burke* (DDG 51) and project Naval architect overseeing structural design for the Canadian Patrol Frigate, HMCS *Halifax* (FFH 330), he had the unique experience of having performed a principal role in the design, construction, test and delivery of three first-of-class warships.

Mr. Stackley was commissioned and graduated with distinction from the United States Naval Academy in 1979, with a Bachelor of Science in Mechanical Engineering. He holds the degrees of Ocean Engineer and Master of Science, Mechanical Engineering from the Massachusetts Institute of Technology. Mr. Stackley earned certification as professional engineer, Commonwealth of Virginia, in 1994.



*Updated: 14 January 2011*

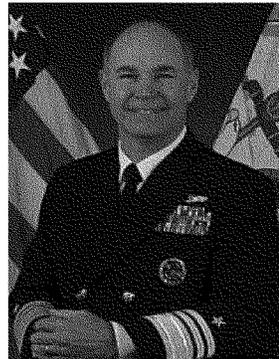


## United States Navy Biography

### Vice Admiral Richard W. Hunt Director, Navy Staff

Vice Adm. Hunt graduated from the University of Wisconsin-Madison in 1975 with a Bachelor of Science in Bacteriology. He was commissioned in February 1976 through the Officer Candidate School Program in Newport, R.I. He attended the Naval Post Graduate School, receiving a Master of Science in Telecommunications Systems Management in March 1988.

Hunt served in USS *Sampson* (DDG 10), USS *Underwood* (FFG 36) and USS *Roark* (FF 1053). As commanding officer of USS *Crommelin* (FFG 37) from August 1993 to May 1995, deployed as part of the *Kitty Hawk* Battle Group in support of Korean Contingency Operations. Following his command tour, he served as assistant chief of staff for Operations and Plans for Commander, Cruiser Destroyer Group 2, deploying twice to the Mediterranean Sea/Arabian Gulf as part of the *George Washington* Battle Group. He served as commanding officer, USS *Philippine Sea* (CG 58) and air warfare commander for the *Enterprise* Battle Group from December 1999 to July 2001. In July 2005, he assumed command of Carrier Strike Group Six. Additionally, he served as commander, Combined Joint Task Force-Horn of Africa, United States Central Command from April 2006 to February 2007; Commander, U.S. 3rd Fleet from June 2009 to April 2011, and commander, Naval Surface Forces/Commander, Naval Surface Force, U.S. Pacific Fleet from June 2011 to July 2012. He became director, Navy Staff in August 2012.



Shore assignments include: assistant professor Naval Reserve Officers Training Corps Unit, The Ohio State University; communications systems officer for Command, Control, Communications, and Computer Systems Directorate (J6), Joint Staff; executive assistant to director Surface Warfare (N86); executive assistant to Deputy Chief of Staff of Naval Operations for Resources, Requirements and Assessments (N8), and Executive Assistant to Chairman, Joint Chiefs of Staff. He additionally served as deputy director, Strategy & Policy, Joint Staff (J5) and director, Programming Division (N80), Navy Staff.

Personal decorations include the Navy Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal, Navy and Marine Corps Commendation Medal, Joint Service Achievement Medal, Navy and Marine Corps Achievement Medal, and various service medals and unit awards.

*Updated: 10 August 2012*

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United States Government Accountability Office



Testimony  
Before the Subcommittee on Seapower  
and Projection Forces, Committee on  
Armed Services, House of  
Representatives

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For Release on Delivery  
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Thursday, July 25, 2013

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## NAVY SHIPBUILDING

### Significant Investments in the Littoral Combat Ship Continue Amid Substantial Unknowns about Capabilities, Use, and Cost

Statement of Paul L. Francis, Managing Director  
Acquisition and Sourcing Management

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Chairman Forbes, Ranking Member McIntyre, and Members of the Subcommittee:

I am pleased to be here today as you examine issues related to the Department of the Navy's Littoral Combat Ship (LCS)—a program framed by a revolutionary approach to shipbuilding acquisition and naval operations. The LCS consists of the ship—called a seaframe—and mission modules, which, when integrated with the seaframe and supplemented with aviation support, provide mission capability.<sup>1</sup> Unlike other Navy surface combatants, which generally have fixed mission systems, LCS is intended to be reconfigurable to perform three primary missions: surface warfare (SUW), mine countermeasures (MCM), and anti-submarine warfare (ASW). These modules are intended to give the Navy flexibility to change equipment in the field to meet different mission needs and incorporate new technology to address emerging threats. Further, LCS is envisioned to have a smaller crew by relying instead on shore-based support for its administrative and maintenance needs. The total estimated acquisition cost of the LCS program is over \$40 billion in 2010 dollars. In total, the Navy plans to buy 52 seaframes and 64 mission packages. GAO has previously reported on a number of challenges related to the LCS program, including cost growth, schedule delays, and problems with delivering intended capabilities.<sup>2</sup> My remarks today are based on our most recent report, which is being released at this hearing, titled *Navy Shipbuilding: Significant Investments in the Littoral Combat Ship Continue Amid Substantial Unknowns about Capabilities, Use, and Cost*.<sup>3</sup>

The Navy's acquisition strategy for LCS seaframes has changed several times over the past decade. The original plan was to fund one or two initial ships, and then spend time experimenting with the seaframes and overall LCS concept before ultimately selecting one seaframe design. The Navy changed this strategy in 2010, however, and has continued to buy

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<sup>1</sup>When one or more mission modules are integrated with aviation capability it is referred to as a mission package.

<sup>2</sup>GAO, *Navy's Ability to Overcome Challenges Facing the Littoral Combat Ship Will Determine Eventual Capabilities*, GAO-10-523 (Washington, D.C.: Aug. 31, 2010).

<sup>3</sup>GAO, *Navy Shipbuilding: Significant Investments in the Littoral Combat Ship Continue Amid Substantial Unknowns about Capabilities, Use, and Cost*, GAO-13-530 (Washington, D.C.: July 25, 2013).

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seaframes from two different shipbuilding teams—each with different design variations. One is led by Lockheed Martin—which builds its ships at Marinette Marine in Marinette, Wisconsin—and the other is led by Austal USA in Mobile, Alabama.<sup>4</sup> The two designs reflect different contractor solutions to the same set of performance requirements. The most notable difference is that the Lockheed Martin *Freedom* variant (LCS 1 and other odd-numbered seaframes) is a monohull design with a steel hull and aluminum superstructure, while the Austal USA *Independence* variant (LCS 2 and other even-numbered seaframes) is an aluminum trimaran.<sup>5</sup> The Navy is developing the mission packages in increments in order to field capabilities faster. The Navy plans on ultimately fielding one ASW increment and four MCM and SUW increments.

The Navy has accepted delivery of the first three seaframes and has spent several years completing various test and maintenance events on the first two—USS *Freedom* (LCS 1) and USS *Independence* (LCS 2). USS *Fort Worth* (LCS 3) was delivered in June 2012. During this time, we and others reported on a number of problems with the seaframes and their equipment, as well as challenges related to the development of mission module technologies. In light of these issues, we were asked to conduct a broad evaluation of the LCS program. Our report addresses (1) the Navy's progress in producing and testing LCS seaframes and any remaining risks; (2) the Navy's progress in developing, producing, and testing LCS mission modules and any remaining risks; and (3) any risks in the Navy's acquisition strategy for the integrated LCS program. To address these issues, we evaluated acquisition and requirements documents, testing plans, and delivery schedules for the two seaframe variants and the various mission modules. We also interviewed Department of Defense (DOD) and Navy officials, visited both shipyards, and toured the three LCS ships that have been delivered to the Navy to date. This work was conducted in accordance with generally accepted

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<sup>4</sup>For LCS 2 and LCS 4, General Dynamics was the prime contractor for the Austal USA-built ships. General Dynamics and Austal USA ended their teaming arrangement in 2010. Austal USA is the prime contractor for the 10 other even-numbered seaframes currently under contract.

<sup>5</sup>A trimaran is a ship that has three separate hulls. The Navy is now referring to the *Independence*-class variant as a slender stabilized monohull design.

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government auditing standards.<sup>6</sup> The key points from our report are summarized below.

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### Seaframe Progress

We found that the Navy has made progress in addressing some of the early design and construction problems on the LCS 1 and LCS 2 seaframes, and quality defects and unit costs are declining, now that the seaframes are in steady production. Based on projected learning curves, shipyard performance can be expected to continue to improve over time. This expected progress could, however, be disrupted, as the Navy is considering potentially significant seaframe design changes. For example, the Navy is currently studying changes to increase the commonality of systems and equipment between the two ship variants, primarily with regard to the ships' combat management systems, and add new capabilities. In addition, the Navy still has outstanding gaps in its knowledge about how the unique designs of the two variants will perform in certain conditions. The lead ship of the *Freedom* class is currently on an extended deployment to Southeast Asia, and the Navy views this as an important opportunity to demonstrate some of the ship's capabilities and allow the crew to obtain first-hand experience with operations. Yet, developmental testing of the seaframes is ongoing, and neither variant has completed shock and survivability testing, which will demonstrate that the ship designs can safely absorb and control damage. Importantly, operational testing of the LCS with its mission modules is several years away, which I will discuss later. Late discoveries of problems while the seaframes continue to be constructed could lead to further design changes.

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### Mission Module Progress

The Navy continues to buy early increments of LCS mission packages before (1) defining requirements and cost, schedule, and performance goals for each increment, as currently required by DOD policy and (2) completing developmental testing, which to date has identified problems with system performance. This evolutionary acquisition strategy, which delivers improving levels of capability over several increments, offers warfighters improved capability as it is available. However, the requirements for the increments have not yet been defined, and the increments will provide performance below the Navy's minimum needs for years to come. In addition, the Navy does not plan to demonstrate that

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<sup>6</sup>For detailed information about our scope and methodology, please see GAO-13-530.

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the MCM and SUW packages can meet minimum—termed “threshold”—requirements until their final increments are fielded in 2017 and 2019, respectively.<sup>7</sup> By that time, the Navy will have already procured more than 24 MCM and SUW mission packages. Further, developmental testing to date—especially for the systems comprising the MCM package—has shown performance problems. Internal Navy studies and wargames have also raised concerns with the overall effectiveness of each mission package based on inherent seaframe or mission module limitations.

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### Acquisition Strategy and Business Case Risks

Significant questions remain about the LCS program and its underlying business case, even as seaframe and mission package procurements continue. Elements of the LCS business case—including its cost and its anticipated capabilities—have degraded over time. Given the program’s cost growth and schedule delays, the congressional cost cap has increased from \$220 million in fiscal year 2006, to \$480 million in fiscal year 2010 per ship.<sup>8</sup> Expected capabilities have lessened from optimistic, early assumptions to more tempered and reserved assumptions. While more explicit examples of specific capabilities that changed are classified, table 1 depicts some significant examples of the changes in Navy statements about LCS’s capability from early in the program to today.

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<sup>7</sup>The Navy plans to meet the threshold performance levels for the ASW package in 2016. This is the first and only increment of that module.

<sup>8</sup>The \$220 million cap applied to the fifth and sixth ships of the class. Pub. L. No. 109-163, § 124. The \$480 million cap applies beginning in fiscal year 2011. Pub. L. No. 111-84, § 121 (2009). GAO-10-523.

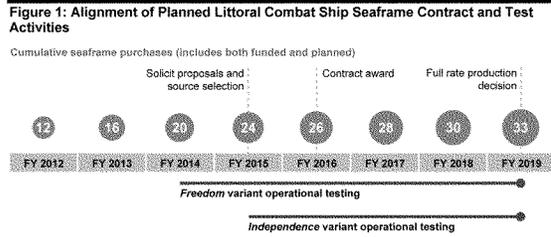
**Table 1: Evolution of Navy Statements about Littoral Combat Ship (LCS) Capability**

Concept	Early (2004-2008)	Current (2011-2012)
LCS's capability against adversaries	Primarily developed for use in major combat operations.  Will gain initial entry and provide assured access—or ability to enter contested spaces—and be employable and sustainable throughout the battlespace regardless of anti-access or area-denial environments.	Current LCS weapon systems are underperforming and offer little chance of survival in a combat scenario.  Not to be employed outside a benign, low-threat environment unless escorted by a multi-mission combatant providing credible anti-air, anti-surface, and anti-submarine protection.
How LCS will deploy	Will be a self-sufficient combatant designed to fight and win in shallow water and near-land environments without risking larger combatants in constricted areas.	Lacks the ability to operate independently in combat. Will have to be well protected by multi-mission combatants. Multiple LCSs will likely have to operate in a coordinated strike attack group fashion for mutual support.
How mission package swaps will be utilized	Mission packages will be quickly swapped out in an expeditionary theater in a matter of days.	Mission packages can be swapped within 72 hours if all the equipment and personnel are in theater, which may take significantly longer. An LCS executing a package swap could be unavailable for between 12-29 days.

Source: GAO analysis of Navy documents.  
 Note: Documents reviewed include LCS capability development documents, LCS concept of operations, and LCS wargaming reports.

Significant unknowns related to key LCS operations and support concepts may also affect the cost of the program and soundness of the business case. Several of the key concepts that underpin the program—such as employing modular weapon systems, highly reduced manning levels, and heavy reliance on shore-based contractor maintenance—represent innovative approaches that have not yet been validated through operations. Changes to any of the above concepts could affect the LCS program and employment of the ships. For example, the Navy may learn that one seaframe variant is more useful in certain mission sets or operating areas than the other.

Finally, the Navy continues to pursue an acquisition strategy that commits to the purchase of significant numbers of ships and mission packages before sufficient knowledge is available, especially testing, as illustrated in figure 1.



Source: GAO analysis of Navy data.

For example, operational testing will demonstrate whether the mission packages, integrated with the seaframes, can meet the Navy's performance requirements. However, as shown in figure 1, based on the current strategy, by the time key operational tests are completed—planned to occur in fiscal year 2019—the Navy will have purchased 33 seaframes—more than half of the planned number. The Navy already has 24 of the planned 52 seaframes under contract, and plans to award further contracts in 2016, before DOD makes a formal decision about full rate production of the ships in 2019. The congressional timeframe for making decisions regarding the Navy's next planned buy is even shorter: the authority and funding the Navy needs to proceed with the 2016 contracts will be presented to Congress in the spring of 2015.

In conclusion, the current LCS program is not the program envisioned over a decade ago. Initial cost estimates have been significantly exceeded and the supporting business case continues to evolve. I believe the LCS class is a novel concept with features that could influence the designs of future Navy ships and all parties would like to see the ships succeed with those features. On that score, the Navy has a great deal of learning to do about the ships, the integrated capability that they are intended to provide when equipped with the mission packages, and how the overall LCS concept will be implemented. Today, the Navy continues to learn about the seaframe design, cost, and performance. But, it still does not know how well the ships will perform their missions, how well its unique crewing and maintenance concepts will work, or how much it will cost to equip and support the ship. Further, the Navy is still considering changes to the ships' design and determining whether or not there are even advantages to having two ship designs. These are things the Navy

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and Congress should know before contracting for more than half of the ships. The deficiencies we have identified are not criticisms of progress in the sense that things should have gone more smoothly or quickly—some issues are expected as part of the discovery process with a new class of ships. At issue, rather, is the misalignment of the program's progress with acquisition decisions, and with key decisions being made well before requisite knowledge is available. This is especially true for LCS, which is well into production at the same time it is still an experimental concept.

In our report, we make several recommendations to DOD. For example, we recommended that DOD limit future seaframe acquisitions until it completes a full-rate production review, and that the Navy limit mission module purchases to the minimum quantities required to support operational testing. We also recommended that DOD report to Congress on the relative advantages of each seaframe variant for each key LCS mission prior to awarding any additional seaframe contracts. In its written response, DOD did not agree with our recommendations aimed at slowing the pace of seaframe and mission package procurements. The Navy cited the need to buy ships at the planned pace to keep pricing low and saw no value in reducing production until the full-rate production decision. We continue to believe that the acquisition approach for this program, with large quantities of ships and modules being bought ahead of key test events, is risky, especially for a new class of ship, like LCS. DOD agreed that the Navy could, if requested by Congress, report on the performance of each seaframe variant against current LCS requirements. However, this response did not address the intent of our recommendation, which was to provide an assessment of the relative costs and advantages and disadvantages of the variants against operational and mission needs in order to help inform future procurement decisions. A complete discussion of DOD's comments and our evaluation are provided in the report.

Our report also includes two matters for congressional consideration. First, to ensure that continued LCS investments are informed by adequate knowledge, Congress should consider restricting funding for additional seaframes until the Navy completes ongoing technical and design studies related to potential changes in LCS requirements, capabilities, and the commonality of systems on the two seaframe variants. Second, to ensure timely and complete information on the capabilities of each seaframe variant prior to making decisions about future LCS procurements, Congress should consider requiring DOD to report on the relative advantages of each variant in carrying out the three primary LCS missions.

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Chairman Forbes, Ranking Member McIntyre, and Members of the Subcommittee this completes my prepared statement. I would be pleased to respond to any questions that you or other members of the subcommittee may have at this time.

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**Contact and Staff  
Acknowledgments**

For questions about this statement, please contact Paul Francis at (202) 512-4841, or at francisp@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this testimony include: Michele Mackin (Director), Ron Schwenn (Assistant Director); Diana Moldafsky (Assistant Director); Kristine Hassinger, Amber Keyser, and C. James Madar.

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Paul Francis is Managing Director of Acquisition and Sourcing Management. He has been with GAO for over 36 years, with most of his work experience being in the area of major weapon acquisitions. He has been a member of the Senior Executive Service since 2002. He has conducted or been involved with reviews of many individual weapon programs, including Army helicopters, Future Combat Systems, unmanned aerial vehicles, tactical communications, shipbuilding programs, and missile defense. He has also conducted or been involved with cross-cutting reviews, several of which involved benchmarking with leading commercial firms and successful Department of Defense programs. These included acquisition culture, transition to production, technology maturation, requirements setting, supplier relationships, integrated product teams, requirements setting, training, test and evaluation, earned value management, milestone authorization, and affordability. He has done work in the areas of wartime medical requirements and detection of landmines and unexploded ordnance. He has testified before congressional committees numerous times. Mr. Francis spent one year with the House Science and Technology Committee early in his career.

Mr. Francis has a Bachelor's degree in Accounting (University of Scranton); a Masters Degree in Public Administration (George Washington University) and a Senior Executive Fellow, (Kennedy School of Government).



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**WITNESS RESPONSES TO QUESTIONS ASKED DURING  
THE HEARING**

JULY 25, 2013

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**RESPONSES TO QUESTIONS SUBMITTED BY MR. FORBES**

Secretary STACKLEY and Admiral HUNT. The Navy is in the process of developing the acquisition strategy for the post block buy ships (Fiscal Year (FY) 2016 and out). Additional information will be provided once the strategy has been developed, estimated to be in late FY 2014. [See page 17.]

Mr. FRANCIS. We believe our recommendations are reasonable and important for ensuring well informed acquisition decisions that meet the Navy’s needs. In regards to the fiscal year 2014 budget under consideration, we suggested that Congress consider restricting funding for construction of additional seaframes until the Navy:

- completes the ongoing LCS technical and design studies,
- determines the impacts of making any changes resulting from these studies on the cost and designs of future LCS seaframes, and
- reports to Congress on cost-benefit analyses of changes to the seaframes to change requirements and/or capabilities and to improve commonality of systems, and the Navy’s plan moving forward to improve commonality.

Waiting until the Navy has presented this information better ensures that there is adequate knowledge to support seaframe construction because the results of these studies may indicate the potential for additional design changes that may have cost implications. As shown in the table below, the Navy planned to have all of the studies completed by the start of fiscal year 2014. Therefore, we would expect the Navy to be able to report the results to Congress before any fiscal year 2014 funding restrictions would take effect.

<b>Studies Referred to in GAO Report</b>	<b>Navy’s Estimated Completion Date</b>
Command, control, communications, computers, and intelligence (C4I) commonality feasibility study	Completed
Common Combat Management System Study	Completed
Flight 1 technical trade study (including habitability)	Completed
Flight 1 capabilities study	Completed

Since these studies should be complete the Navy should be able to meet this proposed reporting requirement prior to March 31, 2014—the last day that the Navy can contractually award funding to the shipyards in fiscal year 2014 without compromising its obligations to the shipyards.

With regards to plans beyond 2016, we recommended that the Navy buy only seaframes at the minimum sustaining rate—which the Navy defines as 1 to 2 ships per yard per year—until it successfully completes a full-rate production decision review in order to ensure that decision makers are adequately informed prior to committing to future seaframe buying decisions. DOD disagreed with this recommendation, stating that delaying or slowing future procurements to a minimum sustaining rate is unnecessary and will cause an increase in prices. However, DOD also stated that it plans to procure future seaframes in accordance with the Annual Long-Range Plan for Construction of Naval Vessels that supported the fiscal year 2014 budget submission which indicates that the Navy plans to procure 2 to 3 ships per year from 2016 to 2027. If the Navy adheres to its current long range shipbuilding plan and continues to buy seaframes from both shipyards as it has been doing, then our recommendation is consistent with the Navy’s future procurement plan. But if the Navy makes significant changes to its future procurement plan, such as opting to downselect to one shipyard (which could increase the rate above the minimum sustaining rate for one shipyard) or planning a large block buy, we would recommend that the Navy first gain key knowledge from operational testing results. We would again caution that while slowing production might result in an increase in seaframe

unit prices, the cost to the government of buying ships before validating performance and ensuring that the seaframes still meet the Navy's needs might be much greater. Since the Navy is not currently under contract for any LCS seaframes beyond 2015, it currently has no longer term contractual obligations to these shipyards that could be impacted. [See page 17.]

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**QUESTIONS SUBMITTED BY MEMBERS POST HEARING**

JULY 25, 2013

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#### QUESTIONS SUBMITTED BY MR. MCKEON

Mr. MCKEON. Please comment on the capabilities of the ALaMO system, the threats it addresses, its development timeline and funding profile.

Secretary STACKLEY and Admiral HUNT. The Advanced Low Cost Munitions Ordnance (ALaMO) system is currently in science and technology demonstration by industry but after successful development it is projected to provide all-weather operation and improved lethality over existing 57mm ammunition. Once developed, ALaMO would provide an extended engagement range and guidance, making it an improved counter-small boat capability. The system uses a combination of two channel, multi-band sensor for target acquisition and Guided Integration Fuzing (GIF) in order to maximize warhead lethality.

ALaMO is not an acquisition Program of Record and therefore not currently funded. The estimated development cost to conduct Engineering Manufacturing and Development over a five year period is estimated to be \$225M. The notional development timeline would lead to Initial Operational Test & Evaluation (IOT&E) of ALaMO in the early part of the fifth year, with an Initial Operational Capability (IOC) later in that same year.

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#### QUESTIONS SUBMITTED BY MR. FORBES

Mr. FORBES. DOD disagreed with GAO's recommendation to only buy the minimum quantity of ships to preserve the industrial base until a full-rate production review is held in 2019. The Navy's most recent long-range shipbuilding plan states that the Navy intends on purchasing two ships per year in fiscal years 2016–2018, followed by three ships per year in 2019. This is the minimum rate if there are two shipyards building LCS. Does the Navy's disagreement with the GAO recommendation mean that it has chosen to downselect to one shipyard as part of its acquisition strategy going forward?

Secretary STACKLEY and Admiral HUNT. The Navy's decision to continue procuring two ships per Fiscal Year in FYs 2016–2018, followed by three ships per year in FY 2019, reflects the need to remain on the critical path to meeting the Navy's Force Structure requirements as outlined by the Chief of Naval Operations (CNO). The LCS shipbuilding profile is in alignment with the CNO's 2012 Navy Force Structure Requirement and does not reflect the outcome of an acquisition strategy. While the Navy is mindful of the need to preserve the industrial base, the Navy disagreed with GAO's recommendation due to the need to maintain the flexibility to consider the appropriate procurement strategy in the context of the industrial base as well as Department of Defense Strategic Guidance and the CNO's Force Structure Requirement.

Mr. FORBES. The former Under Secretary of the Navy and others have noted that each variant may be better suited for certain regions and missions; has the Navy begun to assess the relative advantages of each seaframe design and how will this affect the next contract award?

Secretary STACKLEY and Admiral HUNT. The Navy is evaluating its follow-on acquisition strategy, which includes assessing the advantages of each seaframe design. As part of this acquisition strategy, the Navy will consider a number of factors in making its decision including maintaining competition, overall cost and affordability, each variant's operational performance, as well as the industrial base. All of these factors will be assessed in the context of how to best meet the CNO's Force Structure Requirement.

To date, both LCS variants provide the operational capability required by the Navy and the Navy's decision to continue production of both variants of ships was founded on the additional savings achieved in procurement as well as the benefit to the industrial base. As the two designs become more prevalent in the Fleet and gain additional operational time, the Navy may find that some capabilities are enhanced on one variant over the other and will evolve the ships as has been done with past shipbuilding programs.

Mr. FORBES. Developmental testing to date of the mission modules—especially the mine counter measures mission module—has shown continued performance prob-

lems, with the technologies generally not operating as intended. If the mission modules do not perform as expected in operational testing, how will this affect the Navy's planned purchase of seaframes and/or mission packages?

Secretary STACKLEY and Admiral HUNT. Navy is committed to achieving Initial Operational Capability (IOC) for the three Littoral Combat Ship Mission Packages, and following IOC each mission package will continue to provide improved warfighting capabilities to the Fleet.

Through time-phased fielding of capability, Navy will be able to rapidly field systems as they mature rather than waiting for the final capability delivery. Further, the flexibility of this concept is that if a technology does not meet a specified requirement, a determination can be made to use the technology because of the operational value it provides, or a different technology can be inserted into the mission package without having to start a new system program. Currently the capabilities of the initial increment of each Mission Module exceeds capabilities existing in today's fleet. The result is a savings in both reduced fielding time and overall cost.

As Navy prepares for the next procurement of LCS ships, developmental and operational testing of the capabilities of each LCS Class and associated Mission Package is being conducted and the results will be used to inform future program decisions.

Mr. FORBES. In your 2010 testimony before the Congress, you note that the block buy strategy for seaframe procurement did not require the Navy to buy any ships after the first year and did not have termination costs, thereby enabling the Congress and the Navy to have continual oversight. Given the issues highlighted in GAO's recent report, shouldn't we exercise this oversight and allow the Navy to pause and figure out the design and capabilities that it wants in these ships?

Secretary STACKLEY and Admiral HUNT. Navy does not believe a pause is warranted in construction of the Littoral Combat Ships or the Mission Packages. The required capability of the ships and Mission Packages is well defined within its Capabilities Development Document (CDD) and it is this capability that has been delivered to Navy with the commissioning of USS FREEDOM (LCS 1), USS INDEPENDENCE (LCS 2), USS FORT WORTH (LCS 3) and soon, USS CORONADO (LCS 4).

Since the 2010 testimony, significant strides have been made in addressing key risks to ship production. For example, lessons learned from the lead ships have been captured and thoroughly incorporated into the production planning and processes. Lead ship design deficiencies have been corrected and the design is very stable, with design changes reduced by 80 to 90 percent in the follow ships. Both shipyards have also made substantial investments in facility improvements and workforce training which have greatly improved the accuracy and efficiency in each ship's construction. The larger vendor base is also leveraging the stability provided by the long-term LCS contract to drive down cost. As a result of these improvements, the ship costs are under control and are contained within the fixed-price contracts which limit the Government's liability.

The LCS procurement strategy has not changed since the Block Buy awards in December 2010. Navy will not be required to pay termination or cancellation costs if the FY 2014 and FY 2015 ship contracts are not funded. However, there are additional costs Navy would be required to pay if the FY 2014 and FY 2015 Block Buy ships are not funded. Cost for all ships under contract will be increased due to impact of lost shipyard workload, inefficiencies, and production breaks in the vendor base. The Navy's liability in this case extends to the contract ceiling for LCS 5–LCS 16. Additionally, in the event of lost workload at Austal USA, the Joint High Speed Vessel program cost would increase. Further, insofar as these ships were procured within the framework of the highly competitive fixed price contracts, Navy risks significant cost increases to procure these ships in future years (which would be necessary to meet Navy's requirement). Most importantly, a pause in seaframe procurement would cause a significant impact on meeting Navy's Force Structure for small surface combatants. LCS is central to meeting the Force Structure requirement and pausing production would exacerbate Navy's challenge in building to the right mix of ships as detailed in the 30 year shipbuilding plan.

Mr. FORBES. Why was the Navy delegated acquisition authority for the mission modules program from OSD? What steps do you intend on taking to manage that program, given its continued performance problems, delays in achieving milestones and aggressive acquisition approach?

Secretary STACKLEY and Admiral HUNT. On October 3, 2012, USD(AT&L) signed an Acquisition Decision Memorandum (ADM) designating the Littoral Combat Ship (LCS) Mission Module Program as an ACAT IC program and delegating the Milestone Decision Authority to the Navy. USD(AT&L) retained approval authority for

the initial Acquisition Program Baseline (APB) for the LCS Mission Module Program.

The Navy will execute the normal, rigorous process to ensure that the Mission Module procurement meets the specified requirements, and that the costs are well understood. The Navy continues to perform annual Navy Gate Review and Defense Acquisition Board Integrated Program Reviews with USD(AT&L). Additionally, the Navy will continue to rely on the LCS Council, with 3-star flag officer membership from requirements, acquisition and fleet stakeholders, to drive actions and coordinate all administrative control responsibilities.

The LCS Mission Modules are currently on track to deliver the capability needed by the Navy, and they are doing so within the cost targets established for the program. The greatest risk to the program is not technical, it is the risk posed by disruption and delay caused by continuing resolutions, sequestration and other budget reductions.

Mr. FORBES. The GAO report clearly lays out the delays in the development and integration of the surface-to-surface missile for the Surface Warfare Mission Package. According to the report, the Navy plans to procure just one Griffin unit with eight Griffin IIB missiles by 2015, but now even this plan has been delayed and may be reconsidered. What is the way forward on the surface-to-surface missile? Is the Navy planning to conduct an Analysis of Alternatives to determine the best long-term material solution for this critical component of the Surface Warfare package?

Admiral HUNT. The Navy suspended Surface-to-Surface Missile Module (SSMM) Increment 1 (Griffin) activities during Fiscal Year 2013 in order to assess alternative solutions which could provide increased range and capability. The Navy is also planning on conducting a SSMM Resources and Requirements Review board (R3B) in October 2013.

These events will help determine the SSMM path forward and revised timeline.

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#### QUESTIONS SUBMITTED BY MR. LANGEVIN

Mr. LANGEVIN. My understanding of the LCS program is that the ship is critical to the Navy's network-centric warfare and intended to replace three other classes of aging ships. Understanding the costs, schedule, and performance items associated with the sustainment of this program is important for us in Congress to make informed decisions about the future of the programs. Focusing on the interesting developments in USV and UUV technologies being integrated with the mission packages, I am concerned by the recent July 2013 GAO report that states, "they do not believe the Navy has adequate knowledge about how integrated mission module systems onboard an LCS will perform in an operational environment." Additionally, the GAO report asserts that the Navy will not be able to meet threshold capabilities defined in its requirements documentation with mission modules integrated with the seaframes until 2019. I'd be interested in your assessment of how these critical technologies are being implemented within the LCS program given the setbacks within the Mine Countermeasure Modules (MCM).

Secretary STACKLEY. The Mine Countermeasures (MCM) and Surface Warfare (SUW) Mission Packages are being delivered incrementally for purposes of controlling cost and risk while fielding initial capability in the most rapid manner practicable.

The initial increments for both of these Mission Packages meet or exceed current capabilities in the Fleet today. Each of these Mission Packages brings credible combat capability to the Fleet now for SUW and for MCM in FY 2015.

Increment I of the MCM Mission Package uses a semi-submersible vehicle called the Remote Multi-Mission Vehicle (RMMV), which tows the AQS-20A minehunting sonar set. This system is called Remote Minehunting System (RMS) and can operate under remote control, or execute a programmed search in an autonomous mode to find mines either in the water volume or on the bottom. This system has accumulated over 850 hours of successful testing to date and is scheduled for Initial Operational Capability (IOC) in FY 2015. Increment II will incorporate an unmanned surface vehicle to conduct sustained influence minesweeping capability, and is scheduled for IOC in FY 2017. The last planned increment will use the Knifefish Unmanned Undersea Vehicle (UUV) for buried mine detection, and is scheduled for IOC in FY 2019.

Mr. LANGEVIN. We recently held a hearing on the Asia-Pacific Rebalance; I'd be interested in hearing your thoughts on how the LCS would be utilized within an A2/AD environment.

Secretary STACKLEY and Admiral HUNT. LCS, with a surface, anti-submarine, or mine countermeasures Mission Package embarked, is designed to conduct littoral operations within an Anti-Access/Area Denial (A2/AD) environment. LCS will be a vital component of any A2/AD operations, whether clearing mines, identifying enemy submarines or protecting high value units from hostile, swarming surface craft. Littoral Combat Ships are able to respond to threats quickly with speed (40 plus knots), maneuverability, a shallow draft and the unique capacity to respond with a variety of networked off-board systems.

LCS is designed to operate independently or in surface action groups in low-to-medium threat environments. As a small surface combatant, LCS was not envisioned to operate independently in a high air threat environment. Rather, LCS will be networked as part of a battle force including multi-mission, deep water surface combatants and air assets to defend against elevated A2/AD threats such as high-volume Anti-Ship Cruise Missile (ASCM) raids, Anti-Ship Ballistic Missiles (ASBMs), and tactical air threats. While LCS has a very capable self-defense capability, in situations where the threat of complex and high volume anti-ship missile attack is high, LCS will operate with Strike Group assets or area air defense capable ships.

In addition to Mission Package weapons and systems, LCS will use its speed, organic weapons (including 57mm gun, decoys, chaff, and the RAM and SeaRAM missile system) and sensors to counter surface and air threats in the littorals. Further, LCS has equal or greater self-defense capability compared to today's small surface combatants including Frigates, Mine Countermeasure Ships and Coastal Patrol Craft.

Mr. LANGEVIN. We recently held a hearing on the Asia-Pacific Rebalance; I'd be interested in hearing your thoughts on how the LCS would be utilized within an A2/AD environment.

Mr. FRANCIS. Since GAO has not completed work on this topic, we would suggest that you please direct this question to the Navy for a response.

#### QUESTIONS SUBMITTED BY MR. WITTMAN

Mr. WITTMAN. Much of the savings and efficiencies of the LCS, the forward deployment plan, the mission modules, personnel reductions, logistics supply chains are all "works in progress". When do you expect to have this complete "LCS system" up and running—that means enough mission modules that have been tested and proven deployed to the appropriate location with the correct personnel to support them and the supply chain necessary for this bold concept of operations? When this entire system is up and running and the expected efficiencies are finally realized—the LCS hulls will be 10/15 years, over one third of their hull life will be expired before the efficiencies of the LCS are fully realized?

Secretary STACKLEY. By Fiscal Year 2016, all three mission packages will have achieved Initial Operating Capacity (IOC). By Fiscal Year 2018, the support facilities for Littoral Combat Ships (LCS) and the mission modules will be operational on both East and West Coasts and in two forward operating stations.

In the 3:2:1 rotational crewing concept, three crews rotate between two LCS, with one ship for every two LCS operating forward, providing persistent presence in the Pacific Command (PACOM) and Central Command (CENTCOM) areas of responsibility. Under this concept, with 52 LCS, Navy will be able to continually forward-operate 26 LCS. In the current Navy deployment model for single-crewed cruisers, destroyers and frigates, the Navy would require more than one hundred ships to maintain the equivalent level of presence of 52 LCS. The LCS program remains an economical method to address warfighting capability gaps while providing sizable global forward presence.

In Fiscal Year 2018, the Navy's fleet will include 20 LCS. USS FREEDOM (LCS 1) and USS INDEPENDENCE (LCS 2), which delivered in 2008 and 2010, respectively, will be the only two LCS that will be near the 10 year point of their service life.

By contrast, LCS 5—LCS 20, will be less than four years old at the point when the LCS system is "up and running" with tested and fully supported ships and Mission Packages.

Mr. WITTMAN. How has the Navy ensured compliance with Title 10 maintenance requirements for U.S. homeported ships while supporting LCS 1 forward deployed? And, what will be the ultimate plan for supporting multiple hulls in both Singapore and Bahrain?

Secretary STACKLEY. Title 10 Section 7310 states "A naval vessel the homeport of which is in the United States or Guam may not be overhauled, repaired, or main-

tained in a shipyard outside the United States or Guam, other than in the case of voyage repairs.” USS FREEDOM’s homeport during the current deployment to the Western Pacific remains San Diego, and therefore the Navy is providing required labor and technical expertise for regularly scheduled Preventive Maintenance Availability Periods (PMAV’s) and Restricted Availability Periods (RAV’s) via fly away teams consisting of United States based labor sources.

Navy has ensured compliance with Title 10 maintenance requirements by using U.S.-based “flyaway teams” of U.S. contractors (prime/subprime) for ship and mission module maintenance. Lockheed Martin (LM) also maintains a team in Singapore in order to coordinate logistics, scheduling, planning, quality assurance, liaison with local contractors and Navy, and supervise facilities maintenance. Emergent maintenance, or voyage repairs, can be performed by either flyaway teams or local contractors in accordance with Title 10.

The Navy’s ultimate plan for supporting multiple hulls in Singapore and Bahrain is to have permanent facilities in place at those locations, which will provide storage, staging and laydown of required tools, parts and equipment, as well as providing workshops for U.S. Navy personnel and contractor teams. The ultimate composition of maintenance teams remains to be determined, but the Navy will continue to follow all current and future Title 10 regulations.

Mr. WITTMAN. VADM Hunt, how critical is the ASW mission module to the LCS mission? In 2008 the Navy cancelled the ASW project on LCS after the module showed that it did not contribute significantly to ASW capabilities. The Navy changed the requirements for the module to include a capability that would function in deep-water escort missions of high-value ships and submarines? VADM Hunt, the LCS has been pitched to us as a littoral combat ship that would operate at high speed and independently deploy. With the ASW module, is the idea now to integrate LCS into a Strike Group type scenario for escort duty? I can buy the MCM and SUW modules and filling the MCM and PC gaps in the fleet, but the frigate replacement seems like a stretch to me. Is the ASW module a bridge to far? You have 22 Cruisers and 62 (and counting) DDGs that have advanced ASW combat systems suites. Is this a needed capability in the LCS?

Admiral HUNT. The LCS’s ASW Mission Package (MP) is critical to the LCS mission and to the Fleet’s overall ASW capability. LCS is capable of prosecuting a threat submarine from detection to engagement, on its own or in concert with other ships. The change from a static, barrier ASW capability to a mobile, “in-stride” ASW capability allows an ASW MP-equipped LCS to operate as part of a Strike Group if required. In that case, the LCS’s ASW capabilities would complement those of the other ships and aviation assets to better defend aircraft carriers and other high-value ships. LCS significantly enhances the ASW Commander’s capability to maintain undersea battlespace awareness, counter quiet threat submarines, and protect critical Fleet assets.

LCS with an ASW MP provides this enhanced capability not only in deep water with a Strike Group, but also in littoral regions where FFG 7/CG 47/DDG 51 Class ships may have limited access.

The LCS, equipped with an ASW Mission Package, provides greater ASW capability than the current FFG 7, CG 47, and DDG 51 classes, particularly in a littoral environment. Those ships carry hull-mounted SONAR whose effectiveness is limited against a submarine hiding below an acoustic layer defined by temperature and pressure. The ASW MP provides a variable-depth SONAR that can be placed below this layer to detect these threats. This SONAR also provides a continuously-active acoustic source to provide an uninterrupted flow of data to the LCS. Current SONAR systems employed on other Navy ships must transmit pulsed signals through the water, listen, and then transmit again. This provides a less detailed SONAR “picture” to the ship. Together with the variable-depth SONAR, the continuously-active acoustic source allows an LCS to both detect submarines at longer ranges and better detect submarines that are able to hide from currently-fielded SONAR systems. The ASW MP also provides a towed torpedo decoy system, the Light Weight Tow persistent torpedo decoy system, that has the equivalent functionality of the AN/SLQ-25 NIXIE employed by the FFG 7, CG 47, and DDG 51 classes, but which has an operating envelope that supports lower speed and shallower water operation. Finally, the LCS also is able to operate its sensors at a higher speed than those classes.

Mr. WITTMAN. Admiral Hunt, in light of the Admiral Wray report from last year which highlighted various long-term sustainment challenges, can you please provide specific examples of how the LCS Council has addressed some of these shortfalls and affected change for long-term sustainment of the platform?

Admiral HUNT. The LCS Council has been an integral leadership body in addressing the shortfalls identified in Admiral Wray’s report. Issues addressed by the LCS

Council include a variety of solutions designed to improve reliability and sustainment of the ship and its equipment. Some examples are improving hydraulic systems reliability, for the INDEPENDENCE class ships, installing redesigned water jet controls for increased robustness to FREEDOM (LCS 1) and adding electrical feedback loops to replace mechanical cables on INDEPENDENCE class ships (LCS 2 & 4 scheduled for post-delivery installation).

In order to ensure the long-term material sustainment of LCS, Class Maintenance Plans (CMPs) for both FREEDOM and INDEPENDENCE classes were created by the shipbuilders. Surface Maintenance Engineering Planning Program (SURFMEPP) engineers conduct a continuous technical review of the plans to ensure accuracy. A Maintenance Efficiency Review (MER) was completed in March 2013, resulting in the realignment of FREEDOM (LCS 1) Planned Maintenance between the core crew and ashore maintenance teams. This ensures required upkeep is fully accomplished with proper accountability and quality assurance measures with plans to realign planned maintenance on INDEPENDENCE (LCS 2) in the future.

Per LCS Council decision, the Navy added ten additional crew members to the core-crew to increase organic capacity for preventative and corrective maintenance in order to further enhance organic maintenance accomplishment rates. FREEDOM's current deployment is a test-bed for several improved maintenance efforts yielding positive results. Specifically, installed Reliability Engineering/Condition Based Maintenance (RE/CBM) sensors identified material deficiencies in the ship's air compressors prior to catastrophic failure, allowing for a preemptive repair (vice an unplanned industrial availability) and increasing the time the equipment was available for use.

Mr. WITTMAN. VADM Hunt, as of last month you have contracted 24 seaframes and procured 8 mission modules. You are on track to have a total of 52 seaframes and maintaining a balance of 16 ASW, 24 MCM, and 24 SUW modules. What is the target for optimal and efficient manning for the hulls and the modules?

Admiral HUNT. As Navy gains operational experience with LCS, the Navy will continue to refine the optimal number of billets and rates of Sailors in the LCS core crew and Mission Package detachments. The OPNAV Readiness Review that was conducted by RADM Perez, as well as multiple war games and studies, have demonstrated the need for additional core crew. The additional sailors will increase operational flexibility, enhance embarked maintenance capability, and support robust shipboard Anti-Terrorism/Force Protection (AT/FP) missions when in stationed in austere forward locations.

As a result of these reviews and studies, USS FREEDOM (LCS 1) deployed to the Western Pacific in early 2013 with ten additional core crew members. Navy leadership will use the lessons learned from this deployment to inform any permanent manning changes. Navy also recently decided to add five Sailors to the Mine Countermeasures (MCM) Mission Package detachment, increasing the total number of personnel from 15 to 20. This decision was made to ensure the detachment is able to fully meet the maintenance and handling requirements of the unmanned vehicles that are the center of the MCM Mission Package. The change was made based upon lessons learned during operational tests and evaluations. The number of Sailors for each Anti-Submarine Warfare Mission Package detachment remains at 15 Sailors, while the Surface Warfare Mission Package manning requirement remains at 19 Sailors.

The potential increases in the core crew and the Mission Package are not significant departures from the minimal manning construct. The core crew is still within the threshold requirement of 50 personnel, and total crew manning remains below the threshold of 100 total Sailors.

Mr. WITTMAN. VADM Hunt, what is the estimated procurement cost and life cycle maintenance cost of one mine warfare mission module? One hull costs \$460-\$480M a piece, while module cost seems to be in the range of \$45-\$59M a piece. We want this ship to replace the PCs, the MCMs, and the FFGs ... Can this ship really replace the FFG mission? Would it be as or more affordable/cost effective to build a new FFG?

Admiral HUNT. Based on the Navy's official Service Cost Position of 6 February 2013, the Mine Countermeasures Mission Package has an initial procurement cost of \$97.7M per unit, with an estimated "life cycle maintenance" cost of \$340.1M over 30 years that includes costs for operation and sustainment, replacement/attrition/technology refresh, and disposal.

The Littoral Combat Ship (LCS) will be more capable than the Oliver Hazard Perry Class Frigate (FFG), Patrol Craft (PC), and Mine Countermeasure (MCM) ships. The Navy's strategy calls for a ship to be capable of operating in a wide range of environments ranging from the open ocean to coastal or littoral waters. The LCS's

high speed and low draft design make the ship uniquely qualified to operate in this wide range of environments. While both of these design features are key capabilities, the ship's true capability is its flexibility to be configured to perform any of the capabilities resident in an FFG, PC or MCM, and the LCS will be able to do so with capability that exceeds that of any of these current platforms.

The Surface Warfare (SUW) capability of the LCS is far superior to that of an FFG or PC. The embarked armed helicopter, 30mm and 57mm guns, as well as LCS's much greater speed give LCS a superior counter-swarm capability. The Surface to Surface Missile Module (SSMM) will further improve over time as an extended range missile capability is phased into the ship's arsenal. A SUW Mission Package (MP) is also configured so that LCS can conduct Visit Board Search and Seizure (VBSS), Maritime Interception Operations (MIO), and Intelligence, Surveillance and Reconnaissance (ISR) as proficiently as an FFG, and in certain mission areas, with increased capabilities.

When comparing a legacy MCM ship to an LCS, the MCM MP will almost double Navy's legacy capability when the first increment meets its Initial Operational Capability (IOC) in FY 2015. For example, the Remote Minehunting System (RMS) will provide autonomous clearance of a minefield, taking the ship and the crew out of harm's way while doing so at an increased clearance rate over the MCM's. Future increments will further improve the Navy's ability to find and clear minefields throughout the water column as well as in the beach landing zone.

The Anti-Submarine Warfare (ASW) MP-configured LCS will also provide far greater ASW capability than the FFG 7 Class. The LCS ASW MP complements and expands the detection ranges of today's Strike Group through unique systems such as a variable depth, continuously active sonar system. With improved detection ranges and its ability to operate sensors at increased speeds, LCS significantly enhances the ASW Commander's capability to maintain undersea battlespace awareness, counter quiet submarines, and protect critical Fleet assets. LCS with ASW MP provides this enhanced capability not only in deep water with a Strike Group, but also in littoral regions. The ASW MP's Light Weight Towed Torpedo Decoy will provide superior torpedo defense capability than the AN/SLQ-25 Nixie system carried by the FFG.

A new FFG Class would be neither affordable nor able to be fielded in a timely manner compared to the current LCS Class. The Navy would be forced to incur the high cost and lengthy process of starting a new ship acquisition. Additionally, the legacy ships would have to undergo a costly Service Life Extension Program (SLEP) during the restart of a new program until the replacement FFGs are in-service. The Navy would also be left without a key future component to its global forward presence. The LCS program includes the 3:2:1 rotational crewing concept that provides for three crews to rotate between two LCS, with one ship for every two LCS operating forward. This concept provides persistent presence in the Pacific Command (PACOM) and Central Command (CENTCOM) areas of responsibility. Under the rotational crewing concept, with 52 LCS, Navy will be able to continually forward-operate 26 LCS. In the current Navy deployment model for single-crewed cruisers, destroyers and frigates, the Navy would require more than one hundred ships to maintain the equivalent level of presence of 52 LCS. The LCS program remains an economical method to address warfighting capability gaps while providing sizable global forward presence. The LCS program is the Navy's most affordable warship program, and the ship is on the critical path to meeting the Navy's force structure requirements as outlined by the Chief of Naval Operations.

Mr. WITTMAN. In April the Chief of Navy Reserve testified before the Senate Appropriations Committee Defense Subcommittee

"The Navy Reserve provides daily operational support and is a potent force multiplier that is leveraged on a daily basis to support Navy missions. Examples of the Navy Reserve's support to Navy and Joint Warfighting efforts include:

- Reserve Sailors are currently augmenting the first LCS deployment aboard USS Freedom (LCS-1)."

VADM Hunt, how do you see the Navy Reserve force augmenting the Active duty force in the future and as more hulls and modules enter the fleet? With all options on the table to find efficiencies and cost savings, do reserve units and Sailors offer a long-term force multiplier to the LCS community and do you see this capability growing in the future?

Admiral HUNT. The Navy Reserve provides essential operational support to the Fleet. The LCS Council has been studying further use of the Navy Reserve with the Littoral Combat Ship program as more ships and mission modules enter the Fleet. Navy leadership has determined Reserve Component Sailors will serve in conjunction with the Mission Packages and Aviation Detachments, including the unmanned Fire Scout system.

Reserve Component Sailors provide CONUS/OCONUS maintenance of Mission Packages and Littoral Combat Ships. With respect to LCS Aviation Detachments, the Reserve Component cannot assume the entire mission, but they can provide limited Aviation Detachment support as well as Fire Scout training at shore bases.

In Fiscal Year 2013, Reserve Component manning entailed 387 billets in 13 detachments throughout the country, providing administrative, logistics, training, maintenance and watch standing support. Future plans anticipate growth to approximately 1000 billets in 20 detachments providing a minimum of 20,000 man days of support per year.

Mr. WITTMAN. Admiral, in response to a question posed at a HASC hearing in February 2012 about LCS crew swap, you mentioned that the most significant savings associated with flying ship crews overseas is the cost avoidance of the fuel required for the ship transiting and the cost of the associated support ships. Transporting a ship's crew—even a relatively small LCS crew—between the United States and a foreign port seems to present a significant logistical challenge. Commercial aviation is expensive, lacks flexibility, and is not a viable option in an environment of heightened tensions or conflict.

You stated that the Navy was examining the viability of using Navy Unique Fleet Essential Airlift (NUFEA) to transport crews, cargo and support personnel in both peacetime and wartime for OCONUS LCS crew swaps. According to your statement, the Navy could leverage its own air logistics capability to enhance operational readiness at a significant cost savings.

a. You have recently completed a crew swap of USS FREEDOM (LCS-1). Did the Navy use its NUFEA capability to accomplish this swap?

b. If so, did you find that the utilization of air logistics assets controlled and operated by Navy was a force enhancer and effectively supported the operational capabilities of LCS 1?

c. Your initial analysis concluded that using Navy air logistics assets would also be more cost effective than commercial means. Considering the crew swap model is in place to save steaming dollars and you have found that Navy airlift can execute the mission at a low relatively low cost, does the Navy plan to pursue the crew swap model with any other class of ships?

Admiral HUNT. On July 31, 2013, Navy executed the very first Littoral Combat Ship (LCS) crew swap evolution. A single Navy C-40A Clipper, a Navy Unique Fleet Essential Airlift (NUFEA) asset, was used to execute the crew swap. The USS FREEDOM (LCS 1) Blue Crew—consisting of 76 personnel from ship's company, mission module detachment, and aviation detachment personnel—was safely delivered to Paya Lebar Air Base in Singapore. Following a successful turnover of the ship, the LCS 1 Gold Crew was returned to Continental United States (CONUS) on August 07, 2013, utilizing the Navy C-40A aircraft.

The Navy determined that NUFEA provided the most operationally effective and fiscally efficient method to execute the LCS crew swap mission. The flexibility and responsiveness of Navy's organic airlift assets were critical success factors for this mission. The operational schedule of a forward deployed surface combatant, especially in the Pacific Area of Responsibility, is extremely dynamic and subject to the demands of ever-changing world events. This requires air logistics support that is flexible and able to respond quickly as the ship's operational schedule changes. Since Navy operates and schedules NUFEA assets to support Navy's mission, they are uniquely suited to fulfill this requirement.

Cost analysis was an important consideration when determining how to source the LCS crew swap mission. Examination of the options revealed that Navy saved a significant amount of money using its own airlift vice relying on other airlift options (e.g. commercial, contract or other services' flights). The LCS crew swap model was developed to save ship steaming and maintenance dollars, and NUFEA is an important part of this model.

In addition to being the most cost effective mechanism to execute this air logistics requirement, utilizing the Navy's NUFEA assets enabled FREEDOM's crews to maintain crew integrity throughout the evolution. This permitted an entire crew-to-crew turnover, instead of having to conduct the turnover in multiple iterations if the crew were unable to travel as a unit. Keeping the crew intact during the airlift mission was also essential to ensure force protection—and therefore safety—of FREEDOM's crews.

Due to the success of the first crew swap, Navy plans to use NUFEA assets to execute future LCS crew swap missions. There are no plans to conduct crew swap with other classes of ship, but if that option were pursued by Navy leadership, NUFEA would be a logical choice.

**QUESTIONS SUBMITTED BY MS. SPEIER**

Ms. SPEIER. My office has been told that the LCS 1 deployment to Singapore relied more heavily upon a ship rider than is typical for the Navy, and that some are concerned this may be undermining the ability of the sailors to operate the ship in the future. Are contractors performing functions that should be performed by sailors so they can operate their own ship? How do you know if the training pipeline is working if contractors are supplementing the crew?

Admiral HUNT. During the deployment of USS FREEDOM (LCS 1) to the Western Pacific there have been Subject Matter Experts (SMEs) on board providing technical assistance to the crew as required. SMEs aboard USS FREEDOM are not performing any functions assigned to the officers or enlisted Sailors of FREEDOM's crew.

The first overseas deployment of USS FREEDOM will provide lessons learned which will be examined and applied as needed to the shore based training curriculums in preparation for follow on LCS crew operations and deployments.

Ms. SPEIER. What oversight plan would you recommend for Congress between now and the next block buy decision? Please includes dates of key decision points, information Congress should know before those decision points, and possible indicators of increased cost, schedule, and general program risk.

Mr. FRANCIS. Congress has several options for providing oversight between now and the next block buy decision in 2016. We highlighted a number of these options in our recent report (GAO-13-530) and they are also reflected in the table below.

As shown in the table below, in each fiscal year from now (fiscal year 2013) through fiscal year 2015, Congress is faced with a number of decisions regarding the future of the LCS program, including authorizing and appropriating seaframes and mission modules, and ultimately authorizing the next block buy contract. At the same time, the Navy plans to complete a series of events over the next couple of years, including tests and trials, as well as submissions of Milestone documentation and analytical studies—each of which represent opportunities to gain further insight into the program's performance and enable Congress to make well informed funding decisions (see "Navy Events/Oversight Opportunities"). Milestone documentation may provide an indication of increased cost, schedule, and program risk. For example, consistent with our recommendation, Congress may choose to request that the Navy submit an approved acquisition program baseline for the mission modules that accounts for the threshold and objective cost, schedule, and performance targets for each mission module increment before authorizing future mission module procurements.

Fiscal Year	Congressional Decision	Navy Events/Oversight Opportunities	GAO Recommendations
2013	Authorize and appropriate FY14 funding: 4 ships, 4 mission packages	<ul style="list-style-type: none"> <li>• LCS 1 Singapore deployment</li> <li>• LCS 4 Acceptance Trials</li> <li>• Aluminum structure testing (survivability)</li> <li>• Mission Module Milestone B (including approval of cost, schedule, performance baseline and test plans)</li> <li>• Capability Production Documents (requirements) for Mission Package Increments</li> <li>• Studies evaluating changes to increase commonality and add capability and requirements</li> <li>• Defense Acquisition Board (DAB) In-process Review (annual OSD-AT&amp;L review of program)</li> <li>• Submission of Long Range Shipbuilding Plan</li> </ul>	Restrict FY14 ship funding until Navy: <ul style="list-style-type: none"> <li>• Completes ongoing technical and design studies</li> <li>• Determines impacts of design changes</li> <li>• Reports on plans to improve commonality</li> <li>• Reports on cost-benefit analysis of seaframe changes; commonality improvements</li> </ul> Buy minimum number of modules needed for operational testing.

Fiscal Year	Congressional Decision	Navy Events/Oversight Opportunities	GAO Recommendations
2014	<p>Authorize and appropriate FY15 funding: 4 ships, 4 mission packages</p>	<ul style="list-style-type: none"> <li>• SUW Inc I and Inc II Operational Testing (<i>Freedom</i> variant)</li> <li>• DOT&amp;E operational assessments</li> <li>• Total Ship Survivability Trials (<i>Freedom</i> variant)</li> <li>• Capability requirements for next Block Buy contract finalized</li> <li>• Contract award for long-term maintenance</li> <li>• DAB In-process Review (annual AT&amp;L review of program)</li> <li>• Submission of Long Range Shipbuilding Plan</li> </ul>	<p>If the Navy is approved by USD AT&amp;L to award additional seaframe block buy contracts for LCS 25 and beyond, ensure that it only procures the minimum sustaining rate (1 ship per year for each shipyard) until successful completion of full-rate production review (scheduled for FY19)</p> <p>Require Navy to report on relative advantages of each seaframe before awarding the next Block Buy contract.</p> <p>Buy minimum number of modules needed for operational testing.</p>
2015	<p>Authorize and appropriate FY16 funding: 2 ships, 6 mission packages</p> <p>Authorize next seaframe contract(s) (Second Block Buy contract)</p>	<ul style="list-style-type: none"> <li>• Acquisition strategy for next Block Buy contract finalized</li> <li>• Solicit proposals and source selection for next Block Buy contract</li> <li>• SUW Inc I and Inc II Operational Testing (<i>Independence</i> variant)</li> <li>• MCM Inc I Operational Testing (<i>Independence</i> variant)</li> <li>• DOT&amp;E operational assessments</li> <li>• Total Ship Survivability Trials (<i>Independence</i> variant)</li> <li>• DAB In-process Review (annual AT&amp;L review of program)</li> <li>• Submission of Long Range Shipbuilding Plan</li> </ul>	<p>If the Navy is approved by USD AT&amp;L to award additional seaframe block buy contracts for LCS 25 and beyond, ensure that it only procures the minimum sustaining rate (1 ship per year for each shipyard) until successful completion of full-rate production review (scheduled for FY19)</p> <p>Require Navy to report on relative advantages of each seaframe before awarding the next Block Buy contract.</p> <p>Buy minimum number of modules needed for operational testing.</p>