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RECENT SETBACKS TO THE COAST GUARD DEEPWATER PROGRAM

HEARING

BEFORE THE

SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

FEBRUARY 14, 2007

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ONE HUNDRED TENTH CONGRESS

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RECENT SETBACKS TO THE COAST GUARD DEEPWATER PROGRAM

WEDNESDAY, FEBRUARY 14, 2007

U.S. SENATE,
SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 2:38 p.m. in room SR–253, Russell Senate Office Building. Hon. Maria Cantwell, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Good afternoon, the Subcommittee of the Commerce, Science, and Transportation Committee on Oceans, Atmosphere, Fisheries, and Coast Guard will come to order. I thank my colleague, Senator Snowe, for being here. I know we'll be joined by other colleagues during this hearing, and I thank the witnesses for being here today, as well.

As the Chair of the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard, I'm proud to welcome you to our first hearing of the 110th Congress. It's going to be a busy year for this Subcommittee, and I look forward to working with Senator Snowe, as well as Senators Inouye and Stevens on how we address issues affecting our oceans and our coasts.

I appreciate that our witnesses are taking time from their busy schedules, and no one was, basically, shooed away by a little weather in Washington, D.C. and that you have made an opportunity for us to hear from all of you.

I want to thank you, Admiral Allen, for joining us today. I look forward to your testimony, and I want you to know that I believe that we are allies in getting the Coast Guard the assets that it needs. And in our conversations, you have always struck me as a man of true action, a problem solver, and a respected leader. And we owe you a debt of gratitude, both as the Atlantic Area Commander during 9/11, and for your heroic efforts in the aftermath of Hurricane Katrina. So, thank you.

I also want to thank Mr. Skinner and Mr. Caldwell for being here, as well. Welcome, and thank you for providing Congress with the critical information needed, and the oversight role and responsibilities that we are here to hear about today. I look forward to your expert testimony.

Obviously, our Nation needs a strong Coast Guard, for our national security, and our domestic security. The Coast Guard's key mission of maritime safety, aiding navigation, protecting natural resources, ensuring national security, are of enormous benefit to our country. It is the Coast Guard that ensures that vessel traffic moves smoothly, that our ports are secure, and our fishery laws are enforced, and our shores stay clean.

I think I've said this at this hearing before, Senator Snowe, and others—there's no agency that does more with less in the United States than the Coast Guard, and we thank them for their added responsibilities post-9/11. I know well, in Washington State with Puget Sound, which is one of the most busy, complex waterways in the world—the Port of Tacoma being the third-largest port in the Nation. It moves about 11,000 cargo containers daily, and we have cruise ship traffic that makes for a very demanding sea port.

Last year, 2,000 oil tankers and tank barges made more than 4,000 trips across Puget Sound, which makes oil transportation safety very important. Our passenger ferry system, which the Coast Guard helps us on with security today, carries more people on an annual basis, I believe, than Amtrak does. That says nothing of other complexities of that waterway with fishing and recreational boating.

So, all of this is to say that the Coast Guard is very important to us, as a nation, and I very much understand its importance, along with its international border and drug interdiction missions and responsibilities.

Today, we are here to discus problems, though, that we have seen with the Deepwater Program. And, to look for ways to move forward.

Before we begin, I want everyone at this hearing to know that, in my opinion, all options are on the table. And that is, that we will look at the Deepwater Program and the challenges that we have seen in the last several years, and I believe, do whatever it takes to correct the problems and give the resources and assets to the Coast Guard that they need.

Four recent, independent reports now show us that the Deepwater Program is, indeed, in deep trouble. The Program is not delivering as promised. If someone thought this was a creative way, an experiment—which I think was the original intention—I think that it has shown a failure at a cost of millions of dollars to the taxpayers.

Today, the Deepwater Program has failed to deliver on key assets—a 123-foot patrol boat conversion, the 8 Coast Guard patrol boats that are now out of service, and $100 million is in question. After spending $25 million, the Coast Guard suspended the Fast Response Cutter Project, because the contractor design failed to meet testing requirements. The first two National Security Cutters are at least $500 million over budget, and the current design and construction fails to meet the Coast Guard performance goals, and I know we're going to hear a lot about that. And the Deepwater's unmanned aerial vehicle, Eagle Eye, has huge delays, and problems with the prototype.

Obviously, there are issues and concerns about the National Security Cutter, and the cost. I believe that if the current Deepwater

contract isn't delivering the results—which I believe that it isn't—then we must look for a new approach. I am concerned that the contract gives industry too much authority to grant contracts to itself without open competition. This offers little incentive to control costs, and sidelines the Coast Guard when it comes to oversight.

Just this last week, the Department of Defense Acquisition University—an organization of experts on defense contracting—released a report on Deepwater, I believe it was released February 5. The report makes key recommendations for improving Deepwater, and also points out the positive steps the Coast Guard has already taken to reform their acquisition process. It specifically recommends that the Coast Guard, "define and implement a revised acquisition strategy that does not rely on a single industry entity or contract to produce or support all, or the majority, of U.S. Coast Guard capabilities."

Today, I hope we can begin to move forward quickly and constructively on that revised strategy, so that the Coast Guard receives the ships, planes, and technologies that it needs, and at a fair price to the American taxpayer.

I am committed to doing all that is necessary to ensure that this program gets on the right track, that the Coast Guard gets what it needs in upgrading its fleet and air assets, in order to carry out its mission of safety, security on our Nation's coastlines and waterways.

This hearing is an opportunity for a fair and honest discussion about Deepwater—both the successes, as well as the failures—and how we can move forward on getting the resources that we need for our coastal areas of our country. So, I look forward to working with my colleagues who are here today, and I want to again, thank them for joining us, and I would like to turn to my colleagues, if they would—Senator Snowe, if you would like to make an opening statement.

STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Senator SNOWE. Thank you, Madam Chair, and I certainly appreciate this opportunity to congratulate you on assuming your position as chair of this subcommittee. It is a critical subcommittee in terms of the jurisdiction over the Coast Guard, and the contributions that you have made—you're not unfamiliar with all the issues, the programs that are involved, and I appreciate the leadership that you'll be providing on this subcommittee.

I just want to say a few words about one of the reasons why we are here today, and as chair of this subcommittee for, pretty much all of my career in the U.S. Senate thus far. We're here to discuss the single-most vital Homeland Security acquisition program that's confronting our Nation. That is, of course, Deepwater.

Regrettably, despite the tremendous urgency of upgrading the Coast Guard's assets on the water and in the air, we're compelled to focus our attention to the Coast Guard's apparent failure managing this multi-billion, multi-year project.

I know that, Madam Chair, you share my concerns about the troubling panic that developed and emerged concerning the mis-

management of this program over a number of years. It was disclosed, initially, in *The New York Times,* and obviously the Inspector General, whom we'll be hearing from as well, discovered and revealed, and it's indisputable that we must restore accountability to the Deepwater Program, for the sake of our critical Coast Guard service, and our homeland security.

I'm deeply troubled that this mismanagement was a breach of trust, with the American people and also undermines a program that is so vitally important to our future.

First, we must understand exactly what happened, in order to move forward, and why. And starting with the National Security Cutter. As was revealed in the initial reports, back on December 9, in *The New York Times,* and by the Inspector General last month, "the Coast Guard was fully aware of the significant design problems with this cutter since at least 2004, if not earlier. The investigators found that the design of the ship, if not corrected at considerable cost to the United States taxpayer may not allow it to meet a 30-year fatigue-life." In addition, they reported that the design and performance deficiencies were fundamentally the result of the Coast Guard's failure to exercise its technical and management oversight.

And now, I'm profoundly troubled with further reports that the Coast Guard intentionally omitted problems of the National Security Cutter, when submitting documents to the Inspector General. Unquestionably, the Coast Guard has further jeopardized the trust that is so essential to the support of this vital program, if this is true.

Indeed, I'm not only troubled to learn of the Coast Guard's problem with managing Deepwater and working with the Inspector General, I'm equally distressed about how these transgressions may have damaged the Coast Guard's relationship with those of us in Congress, who have been the champions of this program. I have been, as I said, the chair of this oversight subcommittee, for more than 10 years.

Deepwater has been the subject of numerous hearings since 2001, under my leadership. In addition, I have requested two GAO audits of the Coast Guard's Deepwater oversight. I asked Secretary Chertoff to conduct a best-practices review of Deepwater management, inserted language in three separate Coast Guard authorization bills directing the Coast Guard to report on Deepwater assets and time-lines. In fact, last October my staff visited the Northrop Grumman Shipyard in Mississippi, where the Coast Guard gave them a tour of the National Security Cutter from stem to stern. They received no indication of any problems, whatsoever.

Despite the numerous means by which we exerted our oversight, the Coast Guard failed to alert us to any allegations or investigations into the problems with the Deepwater Program. Not once during these hearings, briefings or visits, was there any mention of the significance of structural design issues, or fatigue-life concerns.

Not once did the Coast Guard relate to Congress the intensity of the debate, and the seriousness of the issue within the Coast Guard itself. And, of course, with the Inspector General—even though it was a pending report, even though it had not been finalized—surrounding what many have called the flagship of the Deep-

water effort—the failure to inform us of such serious structural failings of the National Security Cutter was unprecedented, and unacceptable.

It's simply unconscionable the Coast Guard did not bring these issues to light prior to December 2006, and again, it was a result of a story that was disclosed in *The New York Times*.

Transparency and accountability are essential to any program of this enormity and magnitude, and even more so given the innovative nature of Deepwater's public/private partnership. And yet, the Coast Guard has had considerable difficulties with oversight and execution of the Deepwater acquisitions. Here we are, stunned by the scale and the scope of management failures that threaten to derail the entire program. Our taxpayers, our national security, are not well-served by the "ruthless execution"—and I put that in quotes, because that's what we were told repeatedly—that the Coast Guard has demonstrated in charging forward on the National Security Cutter, despite grave concerns with the ship.

Admiral, understanding what went wrong in all of these instances is only the first of many steps essential to correcting Deepwater's course. The second step is for all parties to hold themselves accountable for their roles and decisions. Admiral, I appreciate that you've assured me in writing, and of course, in our subsequent meetings and telephone calls, that you hold yourself personally accountable and responsible for all of the Coast Guard actions, regardless of when the decisions were made, and I appreciate that. It will be critical that the commitment to reorganize Coast Guard leadership that you expressed in yesterday's State of the Coast Guard Address comes to fruition to help stem the tide of poor decisions that brought us to this point.

Moreover, in light of the recently released report of the Defense Acquisition University, recommending changes in Deepwater's acquisition strategy, contract structure and management, I expect the Coast Guard to develop and present to Congress a detailed plan, outlining its strategy for regaining control of this program, before coming to a final agreement with the ICGS in the next Deepwater award term.

Any new strategy must include the Coast Guard improving its acquisition procedures and re-asserting its oversight responsibilities. To do anything less, places the entire Deepwater Program in jeopardy, and does a profound disservice to the brave men and women of the Coast Guard who desperately require these resources.

As for the allegations of stonewalling and finger-pointing in the IG's investigation, I will introduce legislation that directs the Department of Homeland Security to develop an audit plan, so that the Inspector General would not be encumbered in his future work. It is simply unacceptable that lack of clarity in the Inspector General's authority should hamper investigations on such a critical national security program.

The reasons we need to improve, and perhaps even reform, the Deepwater process are rooted in the urgency for modernizing the Coast Guard fleet. I chaired the April 2004 budget hearing, when your predecessor brought in a thin, rusted piece of metal from the hull of a Coast Guard cutter to make his point about the state of

the fleet. It has been almost 3 years, and those decaying vessels—some up to 64 years old—are still patrolling the waters off our coast.

But, despite the degrading conditions of its assets, just last year, the Coast Guard responded to over 28,000 mariners in distress, and stopped more than 140,000 tons of cocaine from reaching our shores. Clearly, our Nation must have a Coast Guard that is equipped, trained, and ready to meet our maritime and homeland security challenges.

We have all had a chance to see firsthand the Coast Guard's tremendous dedication, as well as your outstanding leadership, Admiral Allen, during Hurricane Katrina. And we will never forget that. And I've been enormously impressed with the can-do spirit of the Coast Guard, and the leadership you exhibited during Hurricane Katrina, and I know the leadership that you provide now, during this troubling period, for the Coast Guard.

And I say all of this, because I do think it's important, to understand what went wrong, why it went wrong, and how we're going to move forward in the best way, that's in the best interest of the Coast Guard, for our national homeland security interest, for the Congress, and for the taxpayer. And I am deeply disturbed, but we've had many conversations about this. But, the fact that we were never presented with any indication or evidence that there were serious problems with the National Security Cutter, in fact, the Coast Guard told me it was a success story. When my staff was down there at the shipyard, in October, there was no revelation whatsoever.

I say all of this because as we move forward I know I can place my trust in you, Admiral Allen—that we will have an open and transparent relationship, and one of accountability, regardless of who is asking these questions. It is so important, because we're talking about a $24 billion program, and assets that are desperately needed, and the men and women of the Coast Guard desperately deserve them. And so, I say that knowing that we will have to work together to determine what is the best way forward, given the circumstances that we're now confronting.

So again, I thank you, Madam Chair, I thank you, Admiral Allen, Mr. Skinner, Mr. Caldwell, and subsequent panel, for all that you're doing to making contributions to ensure that this is a program that can somehow move forward in the way that's consistent with the interests of this country.

Senator CANTWELL. Thank you, Senator Snowe, and thank you for that statement, and your willingness to work on this issue, and again, I enjoyed the short tenure that we've had in working together on this subcommittee.

Senator Lautenberg, would you like to make a statement?

STATEMENT OF THE HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY

Senator LAUTENBERG. Madam Chairman, I thank you very much for holding this hearing, and as I look around this table, I see all the states that have enormous connections with the Coast Guard, enormous dependence on the Coast Guard. We respect the men and women of the Coast Guard greatly. I have always been an admirer

of the Coast Guard's leadership and courage, and their importance in terms of protecting us from all kinds of ills. However, the portfolio of their responsibilities continues to expand, even as we short-change their budgets.

It's surprising, Madam Chairman, when we look at the setbacks that we have here, caused by lack of oversight and neglect by the Administration. The nearly 9 million residents of my home state expect the Bush Administration to be smart stewards of our tax dollars, but I'm concerned that they failed in the oversight of the Deepwater Program.

And it fell so short of expectations. The Deepwater contract, originally projected to be $17 billion, with final delivery slated for 2018, has since blown up. The figures are familiar to everybody. But it's worth repetition: now Deepwater will cost more than $24 billion, with 9 years longer to complete action.

There's a report that was done at the request of the Navy about what our sea situation might be in the latter part of this century. And the assignments broaden out to a whole, different array of things, including protecting our shores from refugees seeking higher land, and seeking faster ships and improved defense readiness. The impact of this mess and delay, combined with the Administration's under-staffing and under-funding of the Coast Guard, means the men and women of the Coast Guard don't have the tools to do their jobs. And the men, women and children of America are not as safe as they should be.

By way of example, if we look at the HH–65 helicopter. More powerful engine, they can carry more people—we saw these helicopters and their crews in action during Hurricane Katrina. Everyone was struck by the heroism of the Coast Guardsmen—the risks they were willing to take to help others by taking stranded residents from rooftops. With more of these helicopters in service, more Americans might have been evacuated.

So, I support the funding for Deepwater, but I don't support the complacency that has been exhibited by the Administration when it comes to its contracting oversight. And I saw it as a member of the Homeland Security and Government Affairs Committee when it had to do with Halliburton. We couldn't get an oversight hearing there, and I wrote five letters requesting one. The response from leadership was that it would have been duplicative.

So, Madam Chair, once again, thank you for delving into this problem. It's one that we must solve, not only for our protection, but also our consciences, as stewards.

Senator CANTWELL. Thank you, Senator Lautenberg.

Senator Lott?

STATEMENT OF THE HON. TRENT LOTT, U.S. SENATOR FROM MISSISSIPPI

Senator LOTT. Thank you, Senator Cantwell, and good luck to you and your leadership of this very important Subcommittee. I look forward to working with you, as Chair, along with the rest of this subcommittee.

As was just observed by Senator Lautenberg, this is a heavily-laden Coast Guard-dependent subcommittee. We all have coastlines, and we know how important the Coast Guard is, so I think

this is a very appropriate hearing. Our goal is to work with the Coast Guard and Department of Homeland Security to upgrade and improve the Coast Guard's capabilities across the board. Obviously, developing a National Security Cutter is a key component of that.

Admiral Allen, I also thank you very much for your leadership of the Coast Guard. Thank you for what you did after Hurricane Katrina, when you helped bring order out of a lot chaos in those states that were hit by Katrina. I'm very proud to see you in the position you now have as Commandant of the Coast Guard. I have a lot of faith in you.

With regard to the particular issue here, I think it's important that we learn from you what has happened, and what you're doing about it, and what your goals are. And, I think it's also important we understand from the Deepwater contractors what really goes on in a program like this, what effort is underway to get it in better shape, and to correct some of the misunderstandings, misinformation, and hyperbole that we have seen in some of the news media about what's going on with the program.

I suspect that the people who are going to testify on this panel, and the next one, know more about ships, ship conversion and cutters than anybody in *The New York Times,* or anybody who talks to *The New York Times.* So, I hope we can get the record straight here today.

Now, I've worked with this program for years. We should have started the Coast Guard's asset replacement back in the 1990s, but we didn't. And then when we started moving into it. The original funding parameter was set at $500 million over 20 years, and was unrealistically low. So, we are now pushing aggressively to catch up with replacing these aging assets, and getting modern cutters. Not being realistic in time or cost expectations has led to some of the Deepwater Program's problems.

There's no question that there have been some mistakes made in how this program has been managed. I also know from experience, in working with the Coast Guard, the Navy and all kind of shipbuilders in my own state and neighboring states, that there has never been a new ship class design that didn't undergo some problems, some modifications, and some changes. In the case of the National Security Cutter, changes were required as a result of the additional national security and homeland security requirements after September 11. You put requirements on this cutter that nobody had originally anticipated.

So, there are, I think, some legitimate explanations of some of the problems. There's no question in my mind that the contractors have got to do a better job of working with the Coast Guard, and that the Coast Guard's contract management capabilities need to be improved. This is a big program. The Coast Guard doesn't have a lot of experience with this size of vessel, or the number and cost of these vessels.

Now, some people are saying, "Oh, we may need radical surgery, we need to cancel the Deepwater contract." Do we want this cutter or not? Do we want to move forward and modernize the Coast Guard or not? Do we need to make changes? Yes. But, I think we need to be careful that we don't do anything rash, which will wind

up costing more, and delaying—even further—the replacement of an aging fleet with modern capability and technologies.

Unfortunately, I have a commitment that I'm going to have to fulfill, so I won't be here for the testimony. But I'm glad that we're going to have the opportunity to hear from you, Admiral Allen, and from the contractors. We'll have a better understanding of what has gone on, and what's going to be done differently, and better, in the future.

And thank you, Madam Chair, for allowing me to make this kind of statement. Thank you.

Senator CANTWELL. Thank you, Senator Lott.

Senator Vitter?

STATEMENT OF THE HON. DAVID VITTER, U.S. SENATOR FROM LOUISIANA

Senator VITTER. Thank you, Madam Chair.

And, I also want to start by thanking Admiral Allen for his leadership after Katrina and for the heroic service of the Coast Guard immediately after Katrina, actually starting during parts of Katrina. There were choppers in the air during the significant winds, beginning to rescue people from their rooftops, so we deeply appreciate that.

I, Madam Chair, have been a strong supporter of the Deepwater Program, and I'll continue to be, because of the need, because of the absolute necessity of developing this new fleet. But, like all of the Committee members, I'm very concerned about some of the problems with regard to the patrol boats that have come up. And I'll obviously get to questions during the question phase of the hearing.

But, two things, just to focus our witnesses on ahead of time. One of our shipbuilders in Louisiana who has been involved in this program is Bollinger Shipyards. Relatively early on in the process, when they were beginning to work on, about, the fourth hull, they understood that this conversion really wasn't working, that there were significant problems with it, because of the state of those very old hulls, and they made a specific proposal to build entirely new hulls for $5 million each, versus this conversion, which was costing $4 million each, with unacceptable results.

And I'd like to know why that proposal was rejected, and why we're clearly on a better path, because what was eventually done is significantly more expensive than that.

And second, as we move forward with this new bridge strategy, I am concerned about this push to develop composite hulls, which isn't here yet. I thought one of the fundamental precepts of the Deepwater Program was to use off-the-shelf technology in a fairly straightforward way. I believe this focus on a composite hull is completely at odds with that, and is basically mushrooming this Deepwater Program into an R&D program, with everything—including much greater costs and unpredictabilities—that go hand-in-glove with that.

So, I have some real concerns with that, as well as some concerns about the cost-benefit comparison between steel hulls for the new FRCs and these future, hopeful, composite hulls. So, we'll get into that later in a question. Thank you, Madam Chair.

Senator CANTWELL. Thank you, Senator Vitter.

Senator Kerry?

STATEMENT OF THE HON. JOHN F. KERRY, U.S. SENATOR FROM MASSACHUSETTS

Senator KERRY. Senator Cantwell, thank you very much. And it's good to see you in the chair. I've had the pleasure of chairing this Subcommittee before and I——

Senator CANTWELL. We thank you for that leadership.

Senator KERRY. Well, it's a great Subcommittee, and I'm pleased to be on this Subcommittee.

Senator Klobuchar was, just a moment ago, claiming special status because, I think, she's the only Member here who has a state that isn't actually on an ocean. We'll have to see whether that's followed through on, or not.

Madam Chairman, thank you for having this important meeting. I join my colleagues in expressing our enormous respect and admiration for the Coast Guard, and the work they've done, and are doing in all of our waters, and we're grateful for that.

The Coast Guard's Deepwater Program—I've been on this committee now for, I guess, about 20 years—and I can remember when we were sitting here with various Coast Guard commandants pleading for money for the Deepwater capacity for the Coast Guard. And we have been, literally, billions of dollars behind in our commitments here in the Congress to giving the Coast Guard the capacity that it both needs and deserves. And they've been working under very, very difficult circumstances, particularly with the augmentation of drug responsibilities, which came significantly in the 1980s, and also now, of course, port security. So, it's a complicated equation without enough resourcing.

Sadly, a structure has been created that isn't working. The Coast Guard's Deepwater Program has been plagued by poor engineering, by lax oversight, and cost overruns that are going to cost the taxpayers billions of dollars. That's the bottom line.

The flawed management structure of the program—I believe it is a flawed management structure—has allowed private contractors, specifically Lockheed Martin and Northrop Grumman, to make management decisions that increased their bottom lines at the expense of taxpayers and national security.

For instance, Lockheed-Northrop, which was supposed to open up subcontracts to competition, instead relied on its own subsidiaries for much of the work, and made questionable purchases, including buying the wrong-sized computer consoles on the new National Security Cutters.

It also changed the design of the cutter. I know there will be arguments about 9/11, *et cetera,* but the bottom line is that, those changes will not allow it to operate for as long as the Coast Guard needs, and will require retro-fitting totaling as much as $500 million.

When the current Deepwater contract expires in June, it is my judgment—I know there will be some difference of opinion on the Committee—but it's my judgment that the Coast Guard ought to drop Lockheed Martin and Northrop Grumman, and hold an open, competitive bidding process, in which they could of course, take

part in under appropriate new standards with a competitive bidding for the remaining aspects of the program, while simultaneously ensuring that the management decisions are made solely by the Coast Guard.

The Coast Guard should also explore every legal avenue to recoup funding from Lockheed-Northrop that it spent on poorly designed ships.

Now, if I might say, I heard Senator Lott talk about *The New York Times*, and what is accurate or not accurate here. I'm not relying on *The New York Times*, though it raises serious questions. But, the Inspector General—and we have the pleasure of having him here—has said in his report, that as of November 16, 2006, "the combined cost of NSCs 1 and 2 has increased from $517 million, to approximately $775 million," representing a 50 percent increase in cost over the original contract prices. Primarily, from the NSC design changes, but other government-requested items not included in the original contract price also add to that.

It also appears now, according to the Inspector General, that the cost of NSCs 1 and 2 will increase beyond the current $775 million, because that figure does not include the $302 million request for equitable adjustments submitted to the Coast Guard by ICGS in 2005.

So, there are very serious questions. Also, the current $775 million estimate does not include the cost of structural modifications to correct design deficiencies, in either NCS 1—which has already been constructed—or NSC 2—which is being constructed—and it doesn't include any costs related to structural modifications to be made to NSCs 3 through 8 to correct these design deficiencies.

So, in my judgment, you know, what we're really looking at, Madam Chairman, is the—you know, there is a definite connection here between cost increases and contractor decisions, that weren't overseen properly because of the management structure that exists.

I think that has got to be changed, that it's our responsibility to change it, to protect the taxpayers, and also, frankly, to leverage the Coast Guard's ability to be able to make the management decisions that it ought to be making with respect to these cutters. It's just an insidious situation, where you have this current construct where management, without oversight, without the Coast Guard decision, can fundamentally augment its bottom line at the expense of the taxpayer, without providing increased defense security or increased capacity to the Coast Guard. That's just insulting, to all of us.

Frankly, the Department of Homeland Security has dropped the ball on behalf of the American taxpayer with respect to this, whether it's buying seaport radiation monitors that can't tell the difference between a bomb or a banana, or issuing inflated, no-bid Katrina clean-up contracts, a lot of contractors have been feeding at the public trough, while failing to adequately defend our interests.

So, I think we need to put an end to that lax oversight, and to the business-as-usual approach, and make common sense choices that provide accountability where it ought to be, create management power where it ought to be, and protect our ability to go forward here with a contract that is appropriately managed—not by

those who are sort of writing the rules as they go along—but managed by a structure that we all sign off on.

Thank you.

Senator CANTWELL. Thank you, Senator Kerry.

Senator Klobuchar?

STATEMENT OF THE HON. AMY KLOBUCHAR, U.S. SENATOR FROM MINNESOTA

Senator KLOBUCHAR. Thank you, Chairwoman Cantwell, for bringing us here together to do our job, to ask the tough questions, and to push for smart, effective solutions.

As Senator Kerry noted, I am the Senator on this Subcommittee without an ocean. Senator Lautenberg suggested that I come to the Senate and ask for an ocean for Minnesota, but since we already have 10,000 lakes, we don't need one.

But we do have one very large lake, which, I think that Admiral Allen, you're familiar with.

Senator CANTWELL. Can you wait until we fix this problem, and then you can——

[Laughter.]

Senator KLOBUCHAR. That would be Lake Superior, and Duluth, Minnesota is the home port of a Coast Guard cutter that's charged with ice-breaking, law enforcement, search and rescue, and aids to navigation. Duluth is also home to a Marine Safety Unit, that coordinates maritime safety, security, and protection of natural resources from the North all along the Canadian border.

And, as a former prosecutor, I know there's nothing more important than protecting the security of our country and our people, and the Coast Guard has an important role in that with our state.

I'd also note that the Coast Guard also aids the navigation of our cargo ships carrying ore, coal and grain, and is very helpful in breaking the ice in the wintertime.

And, I will say, as proud as we are of the work of the Coast Guard, Senator Kerry has raised some good points, as have other Senators, about recent reports that have raised serious questions about the specific acquisitions under the program, as well as the more fundamental problems going on with contracting, and the like. And I believe it's important to explore those questions, and while I'm not going to be able to stay for the entire hearing here, I want you to know that we will continue to ask those tough questions, and also know that we in Minnesota are proud of the work that the Coast Guard does.

Thank you.

Senator CANTWELL. Thank you, Senator Klobuchar.

We'll go to our first panel, and I'm going to ask Admiral Allen for you to start, and again, thank you, and Mr. Skinner, and Mr. Caldwell, for being here today.

Admiral Allen?

STATEMENT OF ADMIRAL THAD W. ALLEN, COMMANDANT, U.S. COAST GUARD, DEPARTMENT OF HOMELAND SECURITY

Admiral ALLEN. Thank you, Madam Chair, Ranking Member Snowe, and the members of the Committee. I'm happy to be here today.

I'm glad that we all agree on one thing, Madam Chair, and that the number one goal—at least as far as I'm concerned—is to convey the critical importance of re-capitalizing aging Coast Guard cutters, aircraft, and sensors.

And, I agree also, Deepwater is essential to the future of America's Coast Guard. We do not have the luxury to restart this program. Last week we decommissioned the Cutter STORIS, after 64 years of service, only to have her replaced by the ACUSHNET, the next oldest cutter, at only 63 years.

Our aging platforms cannot sustain the level of operations required in the current threat environment. Each year the new cutters and aircraft are delayed, we lose more mission hours, and our capability is eroded by failing, or unsustainable equipment. We have to get this right, and we have to do it quickly.

Getting it right means several things. First, internally the Coast Guard must create the right organization and culture, that focuses on effective management and contract oversight. We are doing that.

When I was interviewed to be Commandant by Secretary Chertoff, over a year ago, I understood what needed to be done with this program. I proposed a single acquisition organization to improve program management, and then to align that organization with a new service-wide mission support structure.

Yesterday, in my annual State of the Coast Guard address, I outlined my plan to restructure our command and control, and mission support systems. Deepwater will benefit from this, included is a *Blueprint for Acquisition Reform,* and we've already begun to implement it.

I have clearly defined the role of the Assistant Commandant for Engineering Logistics, my chief engineer, as the Coast Guard's technical authority for acquisitions and a directive to all Coast Guard personnel.

I've assigned Admiral Ron Rabago to lead the Deepwater Program office. Admiral Rabago is a distinguished Naval Engineer with 29 years of service, a former cutter commanding officer, and former commanding officer of the Coast Guard Yard.

We have sought an external, independent assessment of our acquisition process from the Defense Acquisition University—we requested it—and have received a number of recommendations that we are reviewing. This assessment endorses our *Blueprint for Acquisition Reform*.

I also personally asked Comptroller General David Walker, to review our acquisition reform, and will commend this action for Committee sponsorship, as well.

Second, we must collaborate effectively with our industry partners, and when appropriate, provide the direction that preserves the government's interest, and ensures the performance of our cutters and aircraft. We are doing that.

Since assuming my duties as Commandant, I've met frequently with the Chief Executive Officers of Lockheed Martin, and Northrop Grumman. They are both committed, as am I, to getting this done right. We will adjust the terms of the contract going forward to ensure proper emphasis on cost control, competition, and program management. Our Coast Guard technical authority will lead

our efforts in systems integration, both in an oversight role, and as the integrator, when required.

I've also met with the Secretary of the Navy, the Deputy Secretary of Defense, and the Chief of Naval Operations. Each has offered their support. To the extent that we can leverage their capabilities and expertise to do this smarter, and more effectively, we will.

Third, we must maintain cordial, productive relationships with oversight bodies that have legitimate roles in this endeavor. We are doing that. To the extent that we can improve, or provide better guidance to our people, we will do that as well.

I have sent a personal message to every person in the Coast Guard that includes the following statement: "External scrutiny from the Inspector General and other overseers will raise questions on the Deepwater acquisitions throughout its life. As public servants, we are not only subject to their oversight, but it is a central feature of the appropriations process. I welcome external review, as it enables us to improve our processes, be more effective stewards of taxpayer dollars, and better serve the American public. I have met regularly with the Inspector General. To the extent that there is any ambiguity regarding our position on the NSC audit, let me clearly state that we concur, and have implemented, five of the six recommendations made. Regarding the sixth and final recommendation, we are deferring to the Department of Homeland Security to establish department-wide policy where appropriate."

In the past 10 years, the Coast Guard has acquired a number of assets—on schedule, and below estimated cost. Examples include our coastal patrol boat, our large buoy tenders, and the Great Lakes Icebreaker. However, in each case, the acquisition was a single-platform, and systems integration was not a challenge.

Our challenge now is to transform our demonstrated competency as a mid-sized Federal agency to one capable of effectively managing a large, complex, systems integration contract, like Deepwater. And while there's a current focus on two specific cutters, it should be recognized that Deepwater continues to provide new and valuable capability in the form of new fixed-wing aircraft, vastly capable helicopters, and significant upgrades to our legacy cutters.

I have flown in our helicopters, I have ridden our cutters on patrol in the Caribbean. Our people appreciate these tools—that remains the promise of Deepwater. We acknowledge there are issues related to the fatigue-life of the National Security Cutter. We should also acknowledge that this is the most capable cutter we have ever provided to our people.

This program must move forward, and it is my responsibility, not only to get it right, but to demonstrate to the Committee that the Coast Guard has the capability, capacity and competency to manage the re-capitalization of our fleet. The changes that have been occurring in the Coast Guard on my watch, and those to come, are opening focused on mission execution. This is not what Admiral Allen wants, it's what the country needs from its Coast Guard.

I'd be happy to answer any questions.

[The prepared statement of Admiral Allen follows:]

PREPARED STATEMENT OF ADMIRAL THAD W. ALLEN, COMMANDANT, U.S. COAST GUARD, DEPARTMENT OF HOMELAND SECURITY

Introduction

Good afternoon, Madam Chair, and distinguished members of the Subcommittee. It is an honor to be here today to discuss the state of the Integrated Deepwater System, its recent milestones and challenges, and provide you with a look at the way ahead.

Our ability to save lives, interdict drug and alien smugglers, and protect ports, waterways and natural resources depends on our having the best-trained people operating a modern, state-of-the-art fleet. The Deepwater Program has and will continue to provide America with more capable, interoperable assets that will close today's operational gaps and enable the Coast Guard to perform its demanding missions more effectively, efficiently and safely. Deepwater remains my capital priority and I greatly appreciate all that this Subcommittee has done to move the program forward.

I am also grateful for the opportunity to discuss in detail Deepwater issues recently covered in the national media. Some of the stories spoke factually to program challenges that genuinely merit further attention. It is my goal this morning to provide you the facts and reassure you of my absolute commitment to sound stewardship, robust oversight and the corrective actions I've taken to outfit our fleet to meet 21st century threats and requirements. We have to get this right: the Coast Guard's future readiness depends on it. America depends on it.

Past as Prologue

Before I discuss the current state of Deepwater and the program's way ahead, I ask you to bear with me briefly to consider how we got here. By the mid 1990s, most of our ships and aircraft were approaching the end of their service lives. Our cutter fleet was then, and remains, one of the oldest among the world's naval fleets. Some of our cutters are old enough to be eligible for Social Security! In light of a looming block fleet obsolescence, it wasn't sensible to attempt piecemeal, one-for-one replacement of each class of assets. We also didn't have the capacity to manage that many projects in parallel.

Because of these anticipated challenges, we knew an innovative approach was required. And because maritime threats were evolving in the post-Cold War environment in which Deepwater was conceived, we knew expectations for maritime security were changing as well, so our asset mix would need to support these dynamic requirements. We determined, therefore, that it would be most cost effective and efficient to acquire a wholly-integrated system of ships, aircraft, sensors and communications systems, or, as it is commonly called, a "system of systems." The idea is based on the concept that the whole is greater than the sum of its parts; all elements combine to generate greater capabilities across the entire system. Given that, our goal is not to replace ships, aircraft, and sensors with more ships, aircraft, and sensors, but to provide the Coast Guard with the *functional capabilities* required to safely achieve mission success.

This wholly-integrated acquisition strategy called for *progressive* modernization, conversion and recapitalization using a mix of new and legacy assets, replacing those that are obsolete, while upgrading existing ones until a new fleet is acquired. This complex strategy, and the fact that the Coast Guard had not built a ship the size of the National Security Cutter for over three decades, drove our decision to engage the services of a system integrator with proven technical expertise in the acquisition of large systems. Following a rigorous, multiple year selection process, the result was our contract with Integrated Coast Guard Systems (ICGS), a joint venture of Lockheed Martin and Northrop Grumman.

Adding to the program's complexity was adoption of an innovative performance-based acquisition strategy. Compared to more traditional methods, performance-based acquisition is designed to promote innovation and spread risk more evenly between government and industry.

Following nearly 10 years of planning, beginning in 1993, the Coast Guard moved toward contract award believing that we had addressed many of the concerns likely to arise from this transformational strategy. We understood there would be challenges, but we never expected the larger challenge that lay ahead for the Coast Guard and the Nation in the wake of the terrorist attacks of September 11, 2001. Following the Service's transfer to the Department of Homeland Security in March 2003, we conducted a Performance Gap Analysis, drafted a new Mission Needs Statement, and developed a revised, post-9/11 Implementation Plan to ensure Deepwater capabilities would support new mission sets assigned to the Coast Guard. All of these steps were carried out in full consultation with the Administration and Congress. As Deepwater requirements were expanded in the post-9/11 environment, the program's timeline expanded and its overall projected cost grew from $17 to $24 billion.

Where We Are Today in Deepwater

It is important to remember that we are in the early stages of a 25-year acquisition. As is typical, much of the early years of contract execution was focused on design and development work, and we have obligated only about 15 percent of what we project to be the total program cost. However, our Fiscal Year 2007 appropriation of $1.06 billion supports the program's ongoing progress, and I thank you for your continued investment in these critically needed assets that are beginning to make a difference today.

CASA (HC-144A)
Maritime Patrol Aircraft

Despite the challenges that Deepwater has experienced, the Coast Guard has been the beneficiary of significant program accomplishments, including:

- command, control and sensor (C^4ISR) upgrades to all 39 medium and high endurance cutters and at Communications Area Master Station Atlantic (CAMSLANT);
- the December 2006 arrival of our first new HC–144A Maritime Patrol Aircraft, currently undergoing installation of mission pallets in Elizabeth City, NC, to be followed shortly by delivery and missionization of the second and third airframes;
- commencement of our HC–130J missionization program, with scheduled first delivery in 2007;
- upcoming ribbon cutting ceremonies for new Deepwater shore facilities, including a surface ship training center in Petaluma, California, and a hangar to house HC–144As in Mobile, Alabama; and
- continuation of the Mission Effectiveness Programs for 110′ patrol boats and for 270′ and 210′ medium endurance cutters, projects funded by Deepwater and managed by the Coast Guard Acquisition Directorate.

National Security Cutter #1 – USCGC BERTHOLF

Additional milestones include the launch and christening last fall of the first of eight planned National Security Cutters, along with the keel authentication ceremony for the second, which fittingly took place on September 11, 2006. These particular achievements in shipbuilding are especially noteworthy in light of the im-

pacts of the 2005 hurricane season when Hurricanes Katrina and Rita came ashore along the Gulf Coast, upending lives, severely damaging shipbuilding facilities, and further challenging the program. Construction of the NSCs continues and we appreciate the efforts of shipyard workers and Coast Guard men and women in keeping production of these important vessels moving forward. I firmly believe the NSC will provide a great contribution to the Coast Guard and the Nation.

Reengined HH-65C Helicopters

Eighty-four of 95 HH–65 helicopters will have been re-engined and converted to Charlie models by June 2007, enabling operators to routinely perform missions they could not have attempted before, including remaining aloft for longer periods and having the ability to carry greater loads as was demonstrated during Hurricane Katrina rescues.

The Coast Guard and ICGS, Deepwater's systems integrator, are leveraging sound principles of systems engineering and integration to derive high levels of sub-system and component commonality, improve interoperability with the U.S. Navy and other agencies, and achieve significant cost avoidances and savings. This approach conforms with and directly supports the National Fleet Policy.

Beginning in 2002, the Program Executive Officer of Deepwater formalized a collaborative partnership with his Navy and Marine Corps counterparts in order to identify common systems, technologies and processes for improved interoperability. By incorporating common and interoperable Navy systems into Deepwater assets, the Coast Guard has also avoided paying unnecessary costs.

As examples, the National Security Cutter and Offshore Patrol Cutter will use 75 percent of the Navy's AEGIS Command and Decision System. Deepwater assets also will incorporate Navy Type/Navy Owned systems, including the 57-mm deck gun, selected for major Deepwater cutters and the Navy's Littoral Combat Ship and DD(X) programs. The Operation Center Consoles on the NSC use 70 percent of the design of the Navy's Display Systems (AN/UYQ–70). And, by using more than 23,000 lines of software code from the Navy's Antisubmarine Warfare Improvement Program (AIP) in the CASA Maritime Patrol Aircraft's command and control systems, we are maximizing the use of mission systems that are installed on more than 95 percent of the world's maritime surveillance aircraft. The CASA Maritime Patrol Aircraft will utilize more than 50 percent of the functionality of the Navy's P–3 AIP system. Navy and Coast Guard personnel even train side-by-side at the Coast Guard's training facility in Petaluma, California.

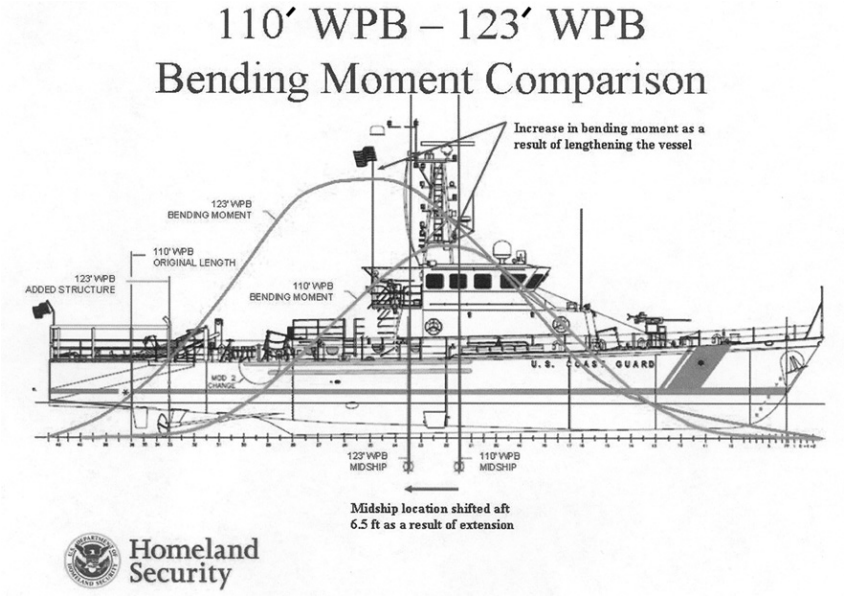
We work closely with the Navy's Operational Test and Evaluation Force (COMOPTEVFOR). Currently, the Naval Air Systems Command staff is assisting us in evaluating the way ahead for Deepwater's VUAV project. We routinely rely on the expertise of Naval Sea Systems Command for a variety of assessments. Personnel from the Navy Supervisor of Shipbuilding Office (SUPSHIP) are assigned to our Program Management Resident Office (PMRO) in Pascagoula, MS, where they are supporting construction of the NSC at Northrop Grumman Ship Systems.

Looking to the future, there are many other opportunities for the Coast Guard and Navy to build on today's rich partnership in the design and delivery of the National Fleet in support of the National Strategy for Maritime Security. Potential areas for future cooperation include the design of the Offshore Patrol Cutter, unmanned aerial vehicles, and common systems for weapons, sensors, and propulsion. Evaluations of sub-systems should include both the equipment and crewing support (*e.g.,* crew composition aligned with capabilities required for a deployment). The collaborative development of LCS mission modules for coastal surveillance and port security missions also offers the potential for greater partnership in an operational mission area shared by both services.

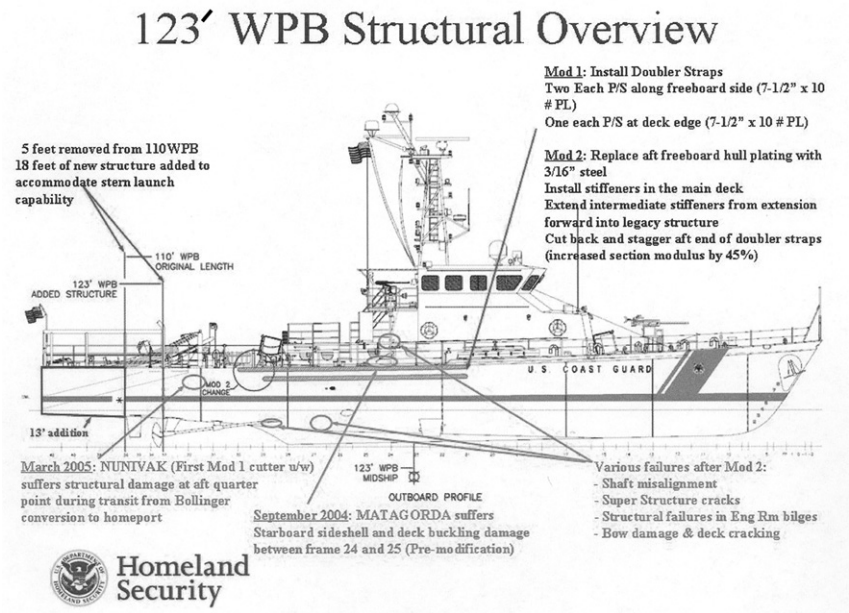
Challenges in Program Execution

The innovative Deepwater program is large and complex and we have faced some challenges. Our performance-based acquisition strategy has created unique contracting and management challenges for the Coast Guard and our industry partners. In my view, some of these come from the need for an integrated Coast Guard, that unifies our technical authority, requirements owner, and our acquirers in a way that allows early and efficient adjudication of problems and ensures transparency so that Coast Guard would be capable of working successfully with ICGS on a simultaneous and complex acquisition of this size. We knew early on that this acquisition would be transformational for our Service, but we have to actively manage that transformation and not allow this acquisition to manage us. We are aggressively tackling and correcting these problems.

And clearly, we have experienced some failures in the Deepwater Program. The planned conversion of 110-foot patrol boats to 123 feet as a bridging strategy until new assets came online to fill the patrol gap has failed. Early on, we experienced hull problems with the first eight patrol boats that had been converted and halted the project in May 2005. Technical problems continued in spite of multiple attempts at repair.



Last November, new problems were discovered, and I made the decision to suspend operation of our 123-foot patrol boats until we determine whether a technical fix is possible and economically prudent. Removing these boats from service was a difficult decision and has added to our critical gap in patrol boat hours. I know that this is of great concern to each of you. I assure you that I, too, am concerned—my highest priority is to mitigate and fill this gap as quickly as possible with the most capable assets.



To that end, I have directed my senior staff to aggressively examine and recommend ways we can use current resources to mitigate the loss of the 123-foot patrol boats. In response and as partial mitigation of the impact, we:

- began multi-crewing eight of our existing 110-foot patrol boats;
- increased their operational tempo;
- redeployed and surged assets to areas of greatest need, based upon risk;
- secured continued use of three PC–179s from the Navy;
- are aggressively examining the purchase of additional 87-foot patrol boats; and
- are compressing the 110′ WPB Mission Effectiveness Project (MEP) schedule to reduce operational impacts.

The Coast Guard will do whatever is necessary to ensure that our maritime borders are secure and we can respond to existing and emergent requirements.

The failure of the 123-foot patrol boat project is unacceptable. I have established a group of legal, contracting, and engineering experts to examine the process at all stages, from beginning design work until we tied up the boats. I have directed this group to establish responsibility and propose measures to prevent similar problems in the future. We will work aggressively with ICGS to reach resolution and put this behind us.

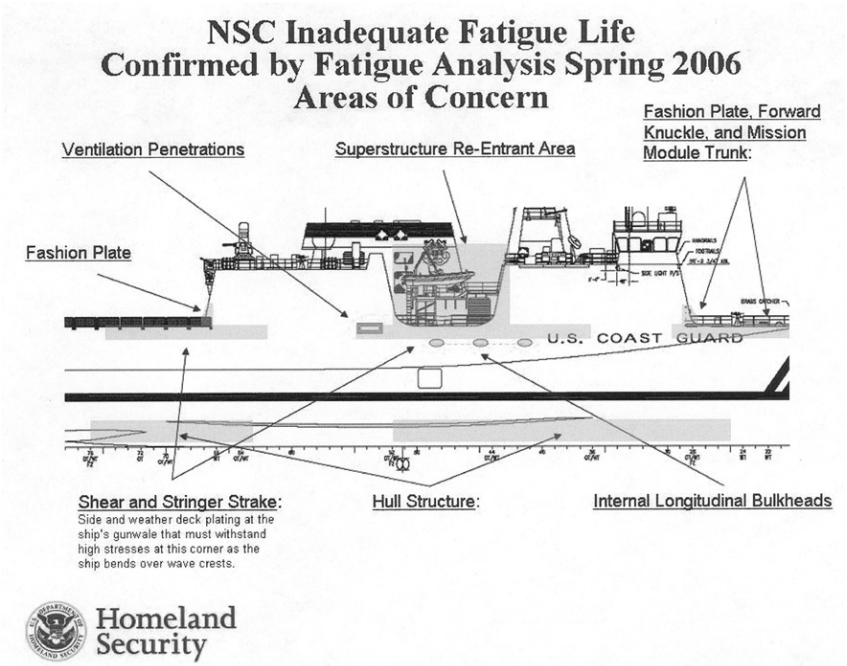
When problems arose with the 123-foot patrol boats, the Coast Guard realized a need for additional patrol boats sooner than the original plan called for. After examining a series of options, we decided to move construction of the FRC forward on the overall Deepwater timeline. However, early tank testing showed technical risks with the initial FRC composite hull design; prudence required suspending the design and development while we considered the way ahead.

Ultimately, we decided to implement a "dual path" approach to acquire a fully capable patrol boat while expediting delivery. First, we took a step back from the initial FRC design to more thoroughly examine both its design and the composite hull technology that the design incorporated. We are completing a bottom-up business case analysis on what we have termed the "FRC–A Class" to provide an "apples to apples" look at composite versus steel hulls. Results from this analysis should be available later this month. Additionally, we had a technology readiness assessment performed to review critical technology elements associated with a composite-hulled design. Initial findings from this assessment indicate that necessary critical technology elements do not yet support immediate production of a composite-hulled patrol boat.

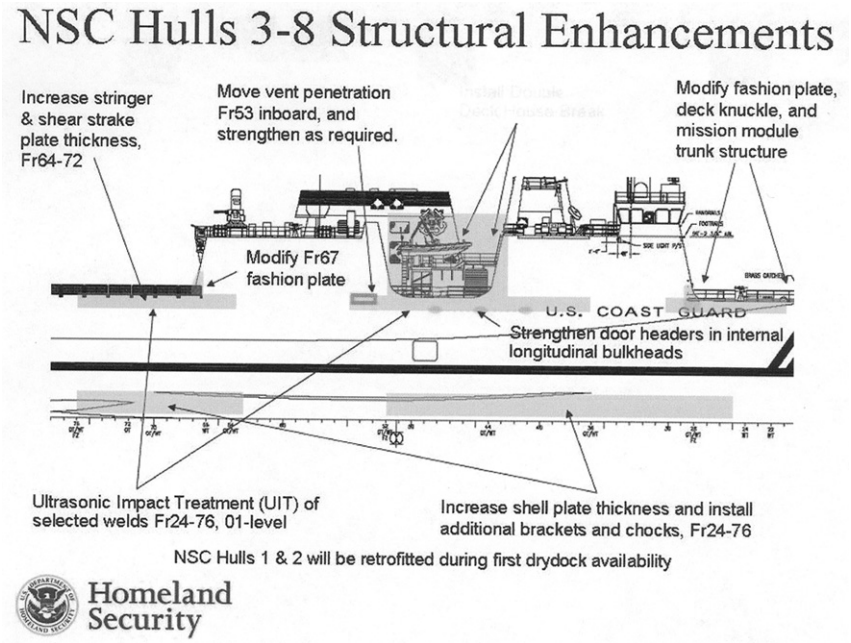
Clearly with this design review, the FRC–A Class path doesn't get boats into the fleet as quickly as needed. As an interim solution, the Coast Guard is simultaneously working to acquire a "parent craft" design based on a vessel already in operation; one that will require minimal modifications to meet our basic mission requirements. We call this our Replacement Patrol Boat or "FRC–B Class." After a good, hard look at the market to determine whether adequate boats exist to support a parent craft approach, we issued a Request for Proposal for such a vessel to ICGS. We expect a design proposal no later than March 31st of this year that will support delivery of the first FRC–B Class in the first half of FY 2010.

Turning to the National Security Cutter (NSC), I would like to clarify reports of structural problems. The DHS OIG recently concluded an audit of the NSC which highlighted concerns with our approach to potential structural integrity issues with the NSC hull. The issue here, which we have communicated to DHS OIG and which we have been actively addressing for several years, is a question of fatigue-life over the course of the cutter's 30-year service life. There has never been a question of safety related to the ship's structure, nor have we ever anticipated any operational restrictions related to its design. As you are well aware, we drive our ships hard, so service and fatigue-life of new cutters is of critical concern to us.

An early Coast Guard review of the design of the NSC indicated that the ship might experience fatigue-level stresses sooner than anticipated. Because we want to ensure that all of our ships meet the service and fatigue-life requirements our missions demand, we are implementing changes and enhancements to the design of the NSC.



Some have wondered why we didn't suspend construction of the first NSC when we learned of these concerns. The Coast Guard's decision to continue production of the NSC reflects more than simply the naval engineering perspective. They also encompass considerations of cost, schedule, and performance. After extensive research and deliberation and with all of these considerations in mind, the Coast Guard decided that the need for enhancements to NSC #1 could be effectively addressed by later retrofits and did not justify the schedule and cost risk associated with stopping the production line. These kinds of issues are not unusual in production of a first-in-class vessel, and I believe the decision to move forward was prudent. We will fix NSC #1 and 2 and design the fix into future hulls' production.



To minimize future delays and disruption resulting from these kinds of design and technical concerns, I:

- reaffirmed in writing the role of the Coast Guard's chief engineer as the technical authority for all acquisition projects;
- directed independent, third-party design reviews as new assets are developed or major modifications to assets are contemplated; and
- am working to expand our relationship with the Naval Sea and Air Systems Commands to leverage outside technical expertise.

We've learned from this experience. Adjudication of technical concerns within the Coast Guard could have been accomplished more efficiently. Existing organizational barriers made it harder for us to jointly address concerns and develop mutually acceptable solutions. We also could have been more proactive in informing Congress—and this Subcommittee—about fatigue concerns. One of my axioms is that "transparency of information breeds self-correcting behavior;" I assure you that as we move forward that transparency will be my watchword.

The Way Ahead

The Deepwater Program Executive Officer, Rear Admiral Gary Blore, has already undertaken a number of independent reviews, including the comprehensive business case analysis and technology readiness assessment for the FRC–A Class just mentioned. Of particular note, we contracted with the Defense Acquisition University (DAU) in 2006 to conduct a "quick-look" review of Deepwater to examine the program's key management and technical processes, performance-based acquisition strategy, organizational structure and our government/industry "partnership" contract. The USCG Research and Development Center is conducting a study and will provide recommendations for the way ahead on the planned Deepwater Vertical-Launch Unmanned Aerial Vehicle (VUAV), and we've initiated an independent review of workload and workforce management issues. Based on these findings and recommendations, we will make "course corrections" where needed in order to lead an efficient organization and guarantee successful execution of the Deepwater Program.

As I mentioned earlier, many of the challenges within the Deepwater Program stem from the lack of an integrated Coast Guard acquisition program to manage this system-of-systems acquisition, as well as to conduct effective oversight of Integrated Coast Guard Systems. We have developed an initial *Blueprint for Acquisition*

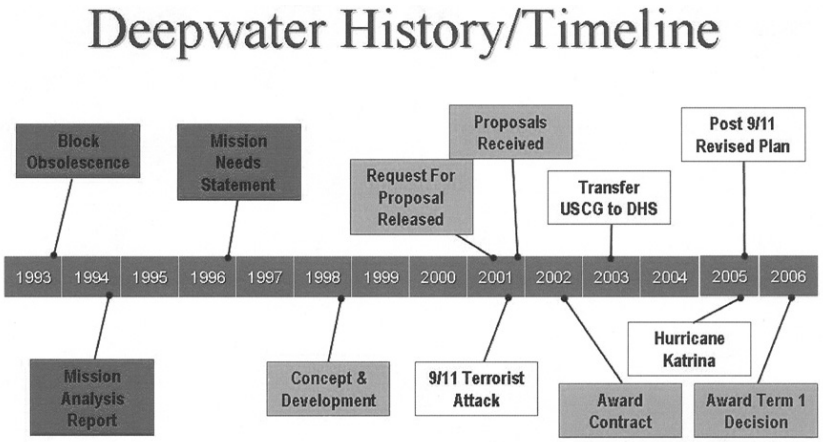
Reform, and in the coming months, you will see significant changes inside the Coast Guard's acquisition directorate to bring all acquisition efforts—traditional as well as system-of-systems—under one organization. Rear Admiral Blore will become the Coast Guard's Chief Acquisition Officer, with responsibility over all procurement projects. The Program Executive Officer for Deepwater will work within the new organization. I have directed Rear Admiral Ron Rabago, a naval engineer, former Commanding Officer of the Coast Guard Yard, and a technical expert on naval engineering issues to take Deepwater's "helm." Consolidating our acquisition efforts will provide immediate benefits, including better allocation of contracting officers and acquisition professionals, and an integrated product line approach to our management of acquisitions, thereby allowing projects to be handled by the same people, with the same expertise and the same linkages to the technical authorities.

Additional efforts are underway within Deepwater and the Coast Guard to develop more appropriate staffing in order to efficiently obligate program funding and ensure successful delivery of needed assets to the fleet. We're reinvigorating our acquisition training and certification process to ensure that Deepwater staff, program managers and contracting officers have the requisite skills and education needed to manage this complex program. Our desired end-state is to become the model for mid-sized Federal agency acquisition and procurement, in full alignment with the Department of Homeland Security acquisition activities.

DAU's recent Quick Look Study of the Deepwater program concluded that our initial *Blueprint for Acquisition Reform* "is comprehensive and responsive to the human capital, organization, process and governance-related findings and recommendations" in its report.

Cost Change and Contractor Oversight

In discussing these challenges and my actions to address them, I need to mention two concerns raised in recent media coverage of the Deepwater program: the first is cost growth; the second is contract oversight. Much of what has been reported in the press as "cost overruns" simply does not tell the full story. There is obvious truth to claims of programmatic cost increases. As noted, the original Deepwater plan was estimated to cost $17 billion and now we're projecting a $24 billion cost over 25 years. However, it is imperative to understand that the main driver of these cost increases was the complete revision of the original plan to meet post-9/11 mission requirements. New missions meant that we needed more capable assets which cost more to acquire and build.



In addition to improved mission capabilities, Hurricanes Katrina and Rita hit the Gulf Coast shipyard industry hard during production of the first National Security Cutter, flooding the hull and causing extensive damage to the facility. The impacts to industry—even just in terms of rebuilding a skilled, sufficient workforce—should not be underestimated. The tragedy was real (I can personally attest to this) and contributed to cost increases and some schedule slippage for the cutter. That these impacts were not greater speaks volumes about the dedication of the shipbuilding industry and its employees along the Gulf Coast.

Of course, we must remain vigilant regarding cost growth. However, I am committed to working with industry to develop and promote cost reduction measures

and am personally engaged with the CEO's of Lockheed Martin and Northrop Grumman regarding my concerns.

I've also read that the Coast Guard is not in control of the Deepwater Program; that we've somehow abrogated our oversight responsibilities and handed industry the "keys to the vault." That is not true. The Coast Guard has been and remains fully involved in the management of this program and has made all final and critical decisions. When appropriate, the issues are briefed all the way up the chain of command to me, and I make the decision myself. And following recommendations from DHS auditors, we have taken steps to ensure that we accurately and thoroughly document such decisions for future reference.

We've redefined our award term and award fee criteria, making them more objective in order to improve contractor performance. As resources allow, the Coast Guard will assume greater responsibility as the system integrator, a role we now feel better positioned to take on.

It is critical that the senior leadership in each of our organizations meet regularly to be informed of the progress of this program so we can provide executive level oversight at all times, and specific direction when warranted. As a result, I am personally committed to doing all that I can to make this a successful starting point for further improvement in both the performance and relationships that exist within the Deepwater program, which is so vital to Coast Guard readiness.

We're on the Path to Change

In conclusion, we have learned some hard lessons and are implementing recommendations from the GAO and OIG to keep Deepwater moving forward. We are making significant progress and outfitting our fleet to meet 21st century threats and requirements.

I am confident the NSC is on the correct course, I'm convinced our FRC "dual path" approach is the best and fastest way to address the patrol boat gap, and I'm pleased that our Deepwater aviation assets are already making real contributions within the fleet. I look forward to the delivery of additional assets and the operational capacity they will bring. They will close the existing aircraft and patrol boat gaps so that we can best protect our maritime borders and tend to the Nation's business at sea.

I know you're anxious for results; I am too, and I assure you nobody is as anxious as the men and women of the Coast Guard. We are on the path to change, and we will not stop until Coast Guard has the tools it needs to protect America.

I am the Commandant of the Coast Guard, I am responsible, I will do this right.

Thank you for the opportunity to testify before you today and for all you do for Coast Guard men and women. I'm happy to answer any questions you may have.

Senator CANTWELL. Thank you, Admiral Allen.

Mr. Skinner?

STATEMENT OF RICHARD L. SKINNER, INSPECTOR GENERAL, DEPARTMENT OF HOMELAND SECURITY

Mr. SKINNER. Good afternoon, Madam Chair, members of the Committee. I'm pleased to be here today. I am particularly pleased to be able to testify side-by-side with Admiral Allen, the Commandant of the Coast Guard. Together, I'm confident that we can paint a clearer picture of the challenges facing the Deepwater Program, and the efforts underway to improve the management and oversight of this very important and complex acquisition initiative.

Over the past two and a half years, my office has completed four audits involving the Deepwater Program. They involved the 123-foot cutter, the National Security Cutter, the command and control information technology systems, and the re-engineering of the HH–65 helicopters.

Four common themes and risks have emerged from each of these audits. First, the dominant influence of expediency. That is, schedule concerns trump performance concerns. This is best illustrated by the National Security Cutter procurement. The Coast Guard proceeded with the construction of the NSC, knowing well in ad-

vance that its technical experts had engineering design, and future performance concerns. The Coast Guard repeatedly told us the decisions regarding the NSC reflected more than simply the Naval engineering perspective. Rather, they also encompassed considerations of cost, schedule and performance. However, the Coast Guard was unable to provide any documentation to support this. The design and performance concerns still remain outstanding today. And the cost to mitigate those concerns has yet to be determined. Without authoritative documentation to support the Coast Guard's decision, it appears the NSC's construction schedule trumped its performance capabilities.

Second, the terms and conditions of the contracts are, in our opinion, flawed. Under the Deepwater Program, the Coast Guard essentially agreed to ride shotgun, turning the reins over to the systems integrator. Consequently, the Coast Guard was reluctant to exercise its authority to influence the design and production of its own assets. This was demonstrated in all four of our audit reports that we issued over the past two and a half years.

Third, our reviews have raised concerns with the definition and clarity of operational and performance requirements. This has compromised the Coast Guard's ability to hold the contractor accountable for its performance. For example, performance specifications associated with upgrading the information systems on the Coast Guard 123-foot cutter, did not have a clearly defined expected level of performance, causing the Coast Guard to accept delivery of assets that did not meet its anticipated requirements.

Also, in our review of the HITRON lease, we determined that a similar lack of clarity in the assets contractual performance requirements challenged the Coast Guard's ability to effectively assess contractor performance. In the NSC acquisition, the cutter's performance specifications were so poorly worded, that there were major differences within the Coast Guard itself for more than 3 years, as to what the NSC's performance capabilities should actually be.

And finally, and simply put, the Coast Guard does not have a sufficient number of staff, and the mix of expertise, to manage an acquisition as large and complex as the Deepwater Program. This is most evident in the areas of program management, acquisition management, and financial management. Also, many of the staff who have been assigned to the Deepwater Program have little experience or training in such a large, complex, performance-based contract.

These issues are not new to the Deepwater Program. As early as February 2003, only 8 months after the award of the Deepwater contract to Integrated Coast Guard Systems, the U.S. Department of Transportation Office of Inspector General reported that; one, the Coast Guard lacked sufficient management controls and capability and capacity to oversee the Program. The Program was initiated without the people needed to manage the effort, even with the out-sourcing of program management to a systems integrator; and, two, it did not have the business processes in place to project complete, current, and authoritative life-cycle costs. Consequently, the Coast Guard is unable to assert, with any degree of certainty, what the true ownership costs of the Deepwater program will be.

This lack of proper foundation for the Deepwater program remains a challenge to this day. And, as a result, the Coast Guard has encountered a number of implementation problems which have resulted in cost increases, schedule delays, and reduced operational performance.

As you heard today from Admiral Allen, the Coast Guard recognizes these challenges, and has taken corrective action to strengthen program management and oversight, such as granting its Chief Engineer with technical authority, thereby taking back the reins of the management of the contract; using independent third-party assessments of performance; consolidating acquisition activities under one Directorate; and redefining the contract terms and conditions, including the award fee criteria and provisions to ensure government involvement in subcontract management in make-or-buy decisions. The systems integrator need not, necessarily, be the source of supply. Furthermore, and most importantly, as Admiral Allen has pointed out, the Coast Guard is increasing its staffing for the Deepwater Program, and reinvigorating its acquisition training and certification processes to ensure that staff has the requisite skills and education needed to manage the program.

The Coast Guard also advised that it is taking steps to improve documentation of key Deepwater-related decisions. This is particularly important to ensure transparency and accountability as the program moves forward.

These steps should significantly increase the level of management and oversight exercised over the assets that are acquired or modernized under the Deepwater Program. However, many of these corrective measures will take time, such as building a procurement workforce to manage the broad scope and complexity of the program. Until this is accomplished, the Coast Guard needs to proceed with caution, taking advantage of all of the tools at its disposal to mitigate risk and avoid future problems.

Madam Chair, that concludes my statement, I'd be pleased to answer any questions.

[The prepared statement of Mr. Skinner follows:]

PREPARED STATEMENT OF RICHARD L. SKINNER, INSPECTOR GENERAL, DEPARTMENT OF HOMELAND SECURITY

Good afternoon, Chairman Cantwell and members of the Subcommittee. I am Richard L. Skinner, Inspector General for the Department of Homeland Security (DHS). Thank you for the opportunity to discuss the status of the U.S. Coast Guard's Deepwater Program.

My testimony today will address the broader contract and program management challenges associated with the Deepwater Program. We will also address how these challenges have impacted specific Deepwater assets, including the modernization of the 110/123-foot Island Class cutters; the National Security Cutter, the upgrades to the Coast Guard's Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance system; the re-engining of the HH–65 helicopter; and the acquisition of the Fast Response Cutter.

Deepwater Program

The Integrated Deepwater System Program (Deepwater) is a $24 billion, 25-year acquisition program designed to replace, modernize, and sustain the Coast Guard's aging and deteriorating fleet of ships and aircraft, providing a deepwater-capable fleet for 40 years. The Deepwater acquisition strategy is a non-traditional approach by which private industry was asked to not only develop and propose an optimal system-of-systems mix of assets, infrastructure, information systems, and people solution designed to accomplish all of the Coast Guard's Deepwater missions, but also

to provide the assets, the systems integration, integrated logistics support, and the program management. Under a more traditional acquisition strategy, the government would have separately contracted for each major activity or asset involved, such as cutters, aircraft, their logistics support, communications equipment, systems integration, and program management support.

In June 2002, the Coast Guard awarded Integrated Coast Guard Systems (ICGS) with a 5-year contract to serve as the Deepwater systems integrator. The current base contract expires in June 2007 and the Coast Guard may authorize up to five additional 5-year award terms. In May 2006, the Coast Guard announced its decision to award ICGS an extension of the Deepwater contract for 43 out of a possible 60 months for the next award term beginning in June 2007. ICGS is a joint venture of Northrop Grumman and Lockheed Martin. The 2002 award decision followed a multiyear competitive phase where two other industry teams vied with ICGS.

Deepwater Program Management and Oversight

We have completed audits of the 110-foot/123-foot Modernization Project; the National Security Cutter, the information technology systems; and the re-engining of the HH–65 helicopters. Common themes and risks emerged from these audits, primarily the dominant influence of expediency, flawed contract terms and conditions, poorly defined performance requirements, and inadequate management and technical oversight. These deficiencies contributed to schedule delays, cost increases, and asset designs that failed to meet minimum Deepwater performance requirements.

Lead Systems Integrator Approach

The route the Coast Guard took to outsource program management to the systems integrator has presented challenges in implementation. The Deepwater contract essentially empowered the contractor with authority for decision-making. Therefore, the Coast Guard was reluctant to exercise a sufficient degree of authority to influence the design and production of its own assets. Specifically, under the contract ICGS was the Systems Integrator and assigned full technical authority over all asset design and configuration decisions; while the Coast Guard's technical role was limited to that of an expert "advisor." However, there is no contractual requirement that the Systems Integrator accept or act upon the Coast Guard's technical advice, regardless of its proven validity. Furthermore, there are no contract provisions ensuring government involvement into subcontract management and "make-or-buy" decisions. The systems integrator decides who is the source of the supply. Also, as the primary management tool for the Coast Guard to contribute its input on the development of Deepwater assets, the effectiveness of the contractor-led Integrated Product Teams (IPTs) in resolving the Coast Guard's technical concerns has been called into question by both the GAO and my office.

Contractor Accountability

Our reviews have raised concerns with the definition and clarity of operational requirements, contract requirements and performance specifications, and contractual obligations. For example, in our report of the NSC, we reported the Coast Guard and the American Bureau of Shipping (ABS) jointly developed standards that would govern the design, construction, and certification of all cutters acquired under the Deepwater Program. These standards were intended to ensure that competing industry teams developed proposals that met the Coast Guard's unique performance requirements. Prior to the Phase 2 contract award, the Coast Guard provided these design standards to the competing industry teams. Based on their feedback, the Coast Guard converted the majority of the standards (85 percent of the 1,175 standards) to guidance and permitted the industry teams to select their own alternative standards. Without a contractual mechanism in place to ensure that those alternative standards met or exceeded the original guidance standards, the competing teams were allowed to select cutter design criteria.

Additionally, the Deepwater contract gives the Systems Integrator the authority to make all asset design and configuration decisions necessary to meet system performance requirements. This condition allowed ICGS to deviate significantly from a set of cutter design standards originally developed to support the Coast Guard's unique mission requirements, and ICGS was further permitted to self-certify compliance with those design standards. As a result, the Coast Guard gave ICGS wide latitude to develop and validate the design of its Deepwater cutters, including the NSC.

Deepwater Performance Requirements Are Ill-Defined

A lack of clarity in the Deepwater contract's terms and conditions have also compromised the Coast Guard's ability to hold the contractor accountable by creating situations where competing interpretations of key provisions exist. For example, the

performance specifications associated with upgrading the information systems on the Coast Guard's 123′ Island Class Patrol Boats did not have a clearly defined expected level of performance. Also, in our review of the HITRON lease, we determined that a similar lack of clarity in the asset's contractual performance requirements challenged the Coast Guard's ability to effectively assess contractor performance. On the NSC acquisition, the cutter's performance specifications were so poorly worded that there were major disagreements within the Coast Guard as to what the NSC's performance capabilities should actually be.

Deepwater Cost Increases

The cost of NSCs 1 and 2 is expected to increase well beyond the current $775 million estimate, as this figure does not include a $302 million Request for Equitable Adjustment (REA) submitted to the Coast Guard by ICGS on November 21, 2005. The REA represents ICGS's re-pricing of all work associated with the production and deployment of NSCs 1 and 2 caused by adjustments to the cutters' respective implementation schedules as of January 31, 2005. The Coast Guard and ICGS are currently engaged in negotiations over the final cost of the current REA, although ICGS has also indicated its intention to submit additional REAs for adjusted work schedules impacting future NSCs, including the additional cost of delays caused by Hurricane Katrina.

The current $775 million estimate also does not include the cost of structural modifications to be made to the NSC as a result of its known design deficiencies. In addition, future REAs and the cost of modifications to correct or mitigate the cutter's existing design deficiencies could add hundreds of millions of dollars to the total NSC acquisition cost. We remain concerned that these and other cost increases could result in the Coast Guard acquiring fewer NSCs or other air and surface assets under the Deepwater contract.

Impact on Coast Guard Operational Capabilities—Short- and Long-Term

The Deepwater record of accomplishment has been disappointing to date. For example, while the re-engining of the HH–65 Bravo helicopters has resulted in an aircraft with significantly improved capabilities, the program has experienced schedule delays and cost increases. For example, the delivery schedule calls for the HH–65 re-engining project to be completed by November 2007 or 16 months beyond the Commandant's original July 2006 deadline. Extending the delivery schedule has exposed HH–65B aircrews to additional risk due to the tendency of the aircraft to experience loss of power mishaps. It also delays the replacement of the eight Airborne Use of Force-equipped MH–68 helicopters that are being leased to perform the Helicopter Interdiction (HITRON) mission at a cost in excess of $20 million per year.

There are also problems with Coast Guard's acquisition of the Vertical take-off and landing unmanned aerial vehicle (VUAV). VUAVs have the potential to provide the Coast Guard flight-deck-equipped cutters with air surveillance, detection, classification, and identification capabilities. Currently, the VUAV acquisition is over budget and more than 10 months behind schedule. The Commandant of the Coast Guard recently testified that the VUAV acquisition was under review. The Commandant indicated that the Coast Guard Research and Development Center is conducting a study and will provide recommendations for the way ahead with the VUAV. A decision by the Coast Guard to stop work on the VUAV project would significantly impact the operational capability of the NSC and OPC by limiting their ability to provide long-range surveillance away from the parent cutter. The Coast Guard's Revised Deepwater Implementation Plan, 2005 calls for the acquisition of 45 VUAVs at a total cost of approximately $503.3 million. As of December 31, 2006, Coast Guard had obligated $108.4 million (73 percent) of the $147.7 million funded for the project.

The increased cost, schedule delays, and structural design problems associated with the 123-foot patrol boat and the FRC have further exacerbated the Coast Guard's patrol boat operational hour and capability gap. The Coast Guard is attempting to mitigate the problem by re-negotiating an agreement with the U.S. Navy to continue the operation of the 179-foot "Cyclone" class patrol boats, and to extend the operational capability of the 110-foot Island Class fleet through the use of multiple crews. While the increased operations tempo this will help in the short-term, it will also increase the wear and tear on these aging patrol boats in the long-term.

The structural design issues associated with the NSC could have the greatest impact on Coast Guard operational capabilities in both the near- and long-term. This is due to cost increases that far exceed the cost of inflation even when the post-9/11 engineering change proposals and the costs increases associated with Hurricane Katrina are left out of the equation. These cost increases are largely due to: (1) ex-

isting and future Requests for Equitable Adjustment that the Coast Guard expects to receive from ICGS; (2) the cost of NSC "structural enhancements," the number, type, scope, and cost of which have yet to be determined; and (3) the schedule delays and lost operational capability, that are expected during the modification to NSCs 1–8.

Summary of Concerns Raised in Recent OIG Reports

110/123′ Maritime Patrol Boat Modernization Project

We recently completed an inquiry into allegations of a Hotline Complaint alleging that the Coast Guard's 123-foot Island Class Patrol Boats (123′ cutter) and short-range prosecutor (prosecutor) contained safety and security vulnerabilities. The 123′ cutter is a modification of the 110′ Island Class patrol boat and was phased into service as part of the Deepwater project. The original Deepwater plan projected the conversion of forty-nine 110′ patrol boats into 123′ patrol boats as a bridging strategy to meet patrol boat needs until the new Fast Response Cutter was introduced. The prosecutor is a 24′ 6″ small boat that can be deployed from the National Security Cutter, Fast Response Cutter, and Offshore Patrol Cutter. The revised Deepwater Implementation Plan calls for the acquisition of 91 prosecutors. The complaint said that these vulnerabilities were the result of the contractor's failure to comply with Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C^4ISR) design requirements as defined in the Deepwater contract. Specifically, the complainant alleged that:

- The safety of the 123′ cutter's crew was compromised by the contractor's failure to utilize low smoke cabling;
- The contractor knowingly installed aboard the 123′ cutter and prosecutor external C^4ISR equipment that did not meet specific environmental requirements outlined in the Deepwater contract;
- The cable installed during the upgrade to the cutter's C^4ISR system represented a security vulnerability; and,
- The video surveillance system installed aboard the 123′ cutter does not meet the cutter's physical security requirements.

Aspects of the C^4ISR equipment installed aboard the 123′ cutters do not meet the design standards set forth in the Deepwater contract. Specifically, two of the four areas of concern identified by the complainant were substantiated and are the result of the contractor not complying with the design standards identified in the Deepwater contract. For example, the contractor did not install low smoke cabling aboard the 123′ cutter, despite a Deepwater contract requirement that stated, "all shipboard cable added as a result of the modification to the vessel shall be low smoke." The intent of this requirement was to eliminate the polyvinyl chloride jacket encasing the cables, which for years produced toxic fumes and dense smoke during shipboard fire. Additionally, the contractor installed C^4ISR topside equipment aboard both the 123′ cutters and prosecutors, which either did not comply or was not tested to ensure compliance with specific environmental performance requirements outlined in the Deepwater contract.

The remaining two areas of concern identified by the complainant were in technical compliance with the Deepwater contract and deemed acceptable by the Coast Guard. Specifically, while the type of cabling installed during the C^4ISR system upgrade to the 123′ cutter was not high-grade braided cable; the type of cable used met the Coast Guard's minimum-security standards as required by the Deepwater contract. Concerning the installation of the video surveillance system, while the system did not provide 360 degrees of coverage, it met minimum contract requirements.

Our review raises many concerns about Coast Guard's program and technical oversight of the Deepwater contractor responsible for the 110′/123′ Modernization Project. For example, the contractor purchased and installed hundreds of non low smoke cables prior to Coast Guard's approval of the Request for Deviation. We are concerned that Coast Guard accepted delivery and operated four 123′ cutters without knowing the extent of the hazards associated with the use of the non low smoke cabling. The contractor also purchased and installed hundreds of C^4ISR topside components aboard the 123′ cutter and prosecutor knowing that they either did not meet contract performance requirements or compliance with the requirements had not been verified. Had Coast Guard reviewed the contractor's self-certification documentation, it would have determined that the contractor had not complied with the stated weather environment standard. For these reasons, we are concerned that similar performance issues could impact the operational effectiveness of C^4ISR system upgrades recently installed aboard its legacy fleet of cutters.

We recommended that the Coast Guard investigate and address the low smoke cabling and environmental issues associated with the equipment installation identified in the hotline complaint and take steps to prevent similar technical oversight issues from affecting the remaining air, surface, and C^4ISR assets to be modernized, upgraded, or acquired through the Deepwater Program. The Coast Guard concurred with the principle findings of our report and its recommendations and said it is in the process of implementing corrective measures.

For reasons unrelated to the issues identified during our inquiry, operations of the 123′ cutter fleet have been suspended. On November 30, 2006, the Coast Guard announced that it was suspending operations of all eight 123′ cutters due to the continuing deformation of the hulls that in some instances resulted in hull breaches. These problems had previously resulted in the implementation of operating restrictions that severely undermined the mission effectiveness of 123′ cutter fleet. However, these operating restrictions did not resolve the hull deformation problem but rather mitigated their impact on crew safety. Consequently, the Coast Guard had to consider whether to implement additional operational restrictions in order to meet minimum crew safety requirements or to suspend 123′ cutter operations until a solution to these problems could be identified and implemented. The Coast Guard determined that additional operating limitations would have further undermined the operational effectiveness of the 123′ cutter. For these reasons, 123′ cutter fleet was withdrawn from service. Although the cutter operations have been suspended, the Coast Guard has not yet determined the final disposition of the 123′ cutter fleet.

National Security Cutter (NSC)

We recently issued a report on the Coast Guard's acquisition of the National Security Cutter (NSC). The objective of our audit was to determine the extent to which the NSC will meet the cost, schedule, and performance requirements contained in the Deepwater contract.

The NSC, as designed and constructed, will not meet performance specifications described in the original Deepwater contract. Specifically, due to design deficiencies, the NSC's structure provides insufficient fatigue strength to achieve a 30-year service life under Caribbean (General Atlantic) and Gulf of Alaska (North Pacific) sea conditions. To mitigate the effects of these deficiencies, the Coast Guard intends to modify the NSC's design to ensure that the cutters will meet the service and fatigue-life requirements specified in its contract with the systems integrator. However, this decision was made after the Coast Guard authorized production of 2 of the 8 cutters being procured.

The Coast Guard's technical experts first identified and presented their concerns about the NSC's structural design to senior Deepwater Program management in December 2002, but this did not dissuade the Coast Guard from authorizing production of the NSC in June 2004 or from its May 2006 decision to award the systems integrator a contract extension. Due to a lack of adequate documentation, we were unable to ascertain the basis for the decision to proceed with the production of the first two cutters, knowing that there were design flaws.

Since the Deepwater contract was signed in June 2002, the combined cost of NSCs 1 and 2 have increased from $517 million to approximately $775 million. These cost increases are largely due to design changes necessary to meet post-9/11 mission requirements and other government costs not included in the original contract price. The $775 million estimate does not include costs to correct or mitigate the NSC's structural design deficiencies, additional labor and material costs resulting from the effects of Hurricane Katrina, and the final cost of the $302 million Request for Equitable Adjustment (REA) that the Coast Guard is currently negotiating with the systems integrator (ICGS).

NSC 1 was christened on November 11, 2006, and final delivery to the Coast guard is scheduled for August 2007. NSC 2 is currently under construction and is scheduled for delivery during the Summer of 2008. As of December 31, 2006, Coast Guard had obligated $751.6 million (49 percent) of the $1,518 million funded for the project.

We made five recommendations to the Coast Guard. Our recommendations are intended to ensure the NSC is capable of fulfilling all performance requirements outlined in the Deepwater contract: and to improve the level of Coast Guard technical oversight and accountability.

Information Technology Systems

We also audited the Coast Guard's efforts to design and implement command, control, communications, computers, intelligence, surveillance, and reconnaissance (C^4ISR) systems to support the Deepwater Program. We determined that the Coast Guard's efforts to develop its Deepwater C^4ISR system could be improved. Although

Coast Guard officials are involved in high-level Deepwater information technology requirements definition process, they had limited influence over contractor decisions toward meeting these requirements. A lack of discipline in requirements change management processes provided little assurance that the requirements remain up-to-date or effective in meeting program goals. Certification and accreditation of Deepwater C4ISR equipment was difficult to achieve, placing systems security and operations at risk. Further, although the Deepwater program had established information technology testing procedures, the contractor did not follow them consistently to ensure the C4ISR systems and the assets on which they are installed performed effectively.

Additionally, the Coast Guard faced several challenges to implementing effectively its Deepwater C4ISR systems. Due to limited oversight as well as unclear contract requirements, the agency did not ensure that the contractor was making the best decisions toward accomplishing Deepwater IT goals. Insufficient C4ISR funding restricted accomplishing the "system-of-systems" objectives that are considered fundamental to Deepwater asset interoperability. Inadequate training and guidance also hindered users from realizing the full potential of the C4ISR upgrades. Instituting effective mechanisms for maintaining C4ISR equipment have been equally challenging.

We made 9 recommendations to the Coast Guard. Our recommendations are intended to increase agency input and oversight into the requirements definition and to clearly define the management processes used to evaluate and apply changes to the Deepwater C4ISR requirements. We also recommended that the Coast Guard increase staffing levels and evaluate its C4ISR spending priorities to improve technical and financial oversight over the C4ISR acquisition. Finally, we recommended that the Coast Guard takes steps to improve the training and technical support provided to C4ISR system users. Coast Guard concurred with all nine recommendations contained in our audit report and is in the process of implementing corrective measures.

Recently, the Coast Guard provided an update regarding the progress being made to implement the recommendations contained in our August 2006 report. In their response, the Coast Guard stated that the language contained in the Deepwater contract, including the contract's "award term" criteria, had been revised to further clarify contractor responsibilities for developing Deepwater C4ISR systems.

However, the Coast Guard is struggling to provide the funding needed to accomplish system of system objectives and maintain an adequate level of oversight over the Deepwater contractor. For example, during FY 2005, C4ISR program managers requested 28 additional staff positions to help with contractor oversight. However, only 5 positions were authorized due to a lack of funding. As a result, the Coast Guard has had to divert management's attention from systems development tasks to the re-planning and re-phasing the work to match the funding constraints and economize in carrying out its program oversight and support activities.

HH–65 Helicopter

We also reviewed the Coast Guard's HH–65 Dolphin helicopter re-engining project. The review was initiated in response to concerns that the re-engining requirements specified for the HH–65 helicopter were not sufficient for the needs of the Coast Guard over the Deepwater project time-frame. Specifically, the HH–65 was experiencing a sharp increase in the number in-flight loss of power mishaps that jeopardized the safety of HH–65 flight crews. Between October 1, 2003, and August 31, 2004, HH–65 aircrews reported 150 in-flight loss of power mishaps. This was in sharp contrast to the 64 in-flight loss of power mishaps that were reported between FY 2000 and FY 2003. Concerns were also raised about: (1) the capabilities of the Honeywell LTS–101–850 engine; (2) the potential cost, delivery, and operational risks associated with the Coast Guard's decision to enter into a contract with Integrated Coast Guard Systems (ICGS) to re-engine the HH–65 fleet with Arriel 2C2 engines; and (3) the ICGS proposal not meeting the Coast Guard's desire to have 84 HH–65s re-engined within a 24-month period, by July 2006, as mandated by the Commandant. In our view, extending the delivery dates unnecessarily exposed HH–65 aircrews to additional risk due to the unprecedented rate in which in-flight loss of power mishaps were occurring.

Our review of the HH–65 re-engining project determined the replacement of the Honeywell LTS–101–750 engines originally installed aboard the HH–65 helicopter with the Arriel 2C2 engine would resolve the safety and reliability issues that had plagued the HH–65 fleet for much of the past decade. Our report also determined that it would be timelier and more cost-effective to have the re-engining performed at the Coast Guard Aircraft and Repair Supply Center (ARSC) than it would if the Coast Guard placed the responsibility for the re-engining under the auspices of

ICGS. The Coast Guard's Assistant Commandant for Operations made a similar recommendation in May 2004.

ICGS' cost proposal for re-engining the HH–65 fleet was $294 million, or $40 million more than the Coast Guard estimated for re-engining the aircraft in-house at ARSC. This was a significant cost differential given ICGS' intention to have 83 (87 percent) of the 95 HH–65s re-engined at ARSC, the effect these additional expenditures could have on the Coast Guard's ability to sustain and upgrade its legacy aviation assets, and the stated inability of ICGS to re-engine the aircraft within the Commandant's 24 month timeline. To date, 69 re-engined HH–65s have been delivered to the Coast Guard. The remaining HH–65 helicopters are to be delivered to the Coast Guard by the end of FY 2007. As of December 31, 2006, Coast Guard had obligated $307 million (89 percent) of the $343 million funded for the project.

We made five recommendations to the Coast Guard. Specifically, we recommended the Coast Guard implement the Assistant Commandant for Operations May 2004 recommendation that the HH–65 re-engining project be taken from ICGS and performed as a government-performed contract. We also recommended that the Coast Guard: (1) refurbish additional HH–65 helicopters; (2) expedite the replacement of the MH–68 helicopters operated by it Helicopter Interdiction squadron in Jacksonville; and (3) take the savings from the termination of the HITRON lease to mitigate the costs associated with the maintenance of its legacy aviation assets.

The Coast Guard did not concur with any of the report's recommendations. Their primary rationale being that ICGS minimized the operational, legal, and contract performance risks associated with the re-engining. The Coast Guard also stated it believed that it received significant benefits from the current ICGS contract that far outweighed the costs of having the Coast Guard manage the project. We did not and do not believe these benefits have been demonstrated in this instance.

The Coast Guard, however, did state in its response that it supported our contention that additional refurbished HH–65s were needed and that the MH–68 helicopters needed to be replaced with AUF-equipped HH–65s as soon as possible. However, in both instances, the Coast Guard cited a lack of funding as the primary reason for not implementing these recommendations.

Fast Response Cutter

The Fast Response Cutter is intended to be the Coast Guard's maritime security workhorse, patrolling in both coastal and high seas areas. According to the Coast Guard, the FRC can safely and effectively operate in higher sea conditions than its legacy counterpart and can remain at sea for up to 7 days, 2 days longer than the Coast Guard's legacy 110-foot cutter. The original 2002 Deepwater implementation plan called for the Coast Guard to take delivery of the first FRCs in 2018. However, because of the suspension of the 123-foot conversion project and deterioration of the remaining 110-foot patrol boats, the FRC project was accelerated to achieve delivery of the first FRCs in 2007, more than 10 years ahead schedule. However, in February 2006, the Coast Guard announced that it was suspending design work on the FRC due to technical issues identified with the hull design. The Coast Guard is currently assessing the suitability of designs in operational service in order to procure a proven patrol boat as an interim solution to address its urgent operational needs until the technical issues associated with the current FRC design are alleviated. We have not yet evaluated the cost, schedule, and performance issues associated with the FRC acquisition. We do know that as of December 31, 2006, Coast Guard had obligated $49.4 million (24 percent) of the $208 million funded for the project to date.

Conclusion

The Coast Guard recognizes these challenges and is taking aggressive action to strengthen program management and oversight—such as technical authority designation; use of independent, third-party assessments; consolidation of acquisition activities under one directorate; and redefinition of the contract terms and conditions, including award fee criteria. Furthermore, and most importantly, the Coast Guard is increasing its staffing for the Deepwater program, and reinvigorating its acquisition training and certification processes to ensure that staff have the requisite skills and education needed to manage the program. The Coast Guard is also taking steps to improve the documentation of key Deepwater-related decisions. If fully-implemented, these steps should significantly increase the level of management oversight exercised over the air, surface, and C^4ISR assets that are acquired or modernized under the Deepwater Program. We look forward to working closely with the Coast Guard to continue the improvement of the efficiency, effectiveness, and economy of the Deepwater Program.

I will conclude by restating that we continue to be highly committed to the oversight of the Deepwater Program and other major acquisitions within the Depart-

ment. We are working with the Coast Guard to identify milestones and due dates in order to assess the most appropriate cycle for reporting the program's progress.

Chairman Cantwell, this concludes my prepared remarks. I would be happy to answer any questions that you or the Subcommittee members may have.

Senator CANTWELL. Thank you, Mr. Skinner.

Mr. Caldwell?

STATEMENT OF STEPHEN L. CALDWELL, ACTING DIRECTOR, HOMELAND SECURITY AND JUSTICE ISSUES, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. CALDWELL. Senator Cantwell, Senator Snowe, Senators Kerry, Lautenberg and Vitter, I'm very pleased to be here again before your Committee to talk about GAO's Deepwater work.

While we've been providing Congress with oversight information on Deepwater since 1998, I think we're at a transition point in terms of oversight, all of us collectively. To make an analogy—we're shifting from looking at the forest, to looking at the trees. And in terms of what that means for Deepwater, it's a shift from looking at the overall structure and management of the contract, which is something we are still looking at, to looking at some of these individual assets as they are designed or delivered.

What we're finding is, unfortunately while that shift in focus has occurred, the view has not improved. So, while there are some assets that have been successful, and Admiral Allen has talked about those, we've got some major problems with some of the vessels that have recently been delivered.

As mentioned in my statement, since 2001 we have identified risks with the Coast Guard's overall approach to Deepwater, in terms of relying on a lead integrator, developing a system of systems, and using a performance-based contract. All three of these aspects, if not done with appropriate oversight, could increase the risk of the Coast Guard to be able to adequately manage an acquisition of this scope and magnitude.

My statement also refers to our 2004 report, where we made 11 recommendations to the Coast Guard, in the areas of program management, contractor accountability, and cost control. And more recently, the Coast Guard has reported to Congress on the status of those recommendations.

When I last testified before this Committee last Spring, we had recently issued a report, which noted some Coast Guard progress toward closing out those recommendations. And we are currently in the process of reviewing the Coast Guard's continuing work to close those recommendations. This ongoing GAO review is being done for the Senate and House Appropriations Committees as part of a legislative mandate. I assure you that we will provide this committee with an update, as soon as new information is available on that.

But now, moving from that forest to the trees, I think some of our more recent work, focusing on the individual assets, has identified additional problems. Last Spring, our report on the Fast Response Cutter noted problems that ultimately led the Coast Guard to stop all design work on that particular vessel. Similarly, recent reports as just noted here, by the Inspector General, have noted the problems with the National Security Cutter, as well as the 123-foot patrol boat.

These asset-specific reports expand the focus of the problem from that of acquisition management to operational effectiveness which, as many of us know, is considered one of the Coast Guard's core competencies. So, this is where the rubber is supposed to meet the road, but it is not doing so.

The suspension of the FRC design work, and most especially, the suspension of the 123-foot patrol boat operations, highlights just how important acquisition management is. And it really shows the effect now on the Coast Guard's key missions, such as maritime security, fisheries protection, search and rescue and even national defense.

Admiral Allen, as well as Admiral Blore, in their testimony today—and before other committees—clearly have made it a priority to give their sailors and airmen vessels and aircraft as soon as possible. Admiral Allen just referred to that as the promise of Deepwater, and they've outlined several steps to improve the management of Deepwater toward that promise.

Here at GAO, we stand ready to assist Congress, working again with the Coast Guard, toward that same promise. However, as auditors, we must observe our traditional caution, and due diligence, in evaluating whether the efforts that have been laid out here, will actually achieve their desired outcomes.

Thank you, and I'd be pleased to answer any questions.

[The prepared statement of Mr. Caldwell follows:]

PREPARED STATEMENT OF STEPHEN L. CALDWELL, ACTING DIRECTOR, HOMELAND SECURITY AND JUSTICE ISSUES, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Madam Chair and members of the Subcommittee:

Thank you for inviting me here today to discuss our reviews of the U.S. Coast Guard's $24 billion Deepwater program. While there is widespread acknowledgment that many of the Coast Guard's aging assets need replacement or renovation, concerns also exist about the acquisition approach the Coast Guard adopted in launching the Deepwater program. From the outset, we have expressed concern about the risks involved with the Coast Guard's acquisition strategy.[1] The subsequent changes in the Deepwater asset mix and delivery schedules only increased these concerns. In 2004, we reported that well into the contract's second year, key components needed to manage the program and oversee the system integrator's performance had not been effectively implemented.[2] Accordingly, we made 11 recommendations to address three broad areas of concern: improving program management, strengthening contractor accountability, and promoting cost control through greater competition among potential subcontractors.

My statement today will discuss our prior work on the Coast Guard's Deepwater program. Specifically, I will discuss:

- the Coast Guard's acquisition approach for the Deepwater program;
- previous GAO recommendations to the Coast Guard on Deepwater, highlighting the importance of Integrated Product Teams; and
- operational challenges the Coast Guard is facing because of performance and design problems with Deepwater patrol boats.

This testimony is based on our prior work on the Deepwater program. That work was conducted in accordance with generally accepted government auditing standards. We have ongoing work across all of the issues discussed in this statement.

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[1] GAO, *Coast Guard: Progress Being Made on Deepwater Project, but Risks Remain,* GAO–01–564 (Washington, D.C.: May 2, 2001).

[2] GAO, *Contract Management: Coast Guard's Deepwater Program Needs Increased Attention to Management and Contractor Oversight,* GAO–04–380 (Washington, D.C.: Mar. 9, 2004).

Summary

In 2001, we described the Deepwater program as "risky" due to the unique, untried acquisition strategy for a project of this magnitude within the Coast Guard. The Coast Guard used a system-of-systems approach to replace deteriorating assets with a single, integrated package of aircraft, vessels, and unmanned aerial vehicles, to be linked through systems that provide command, control, communications, computer, intelligence, surveillance, and reconnaissance (C^4ISR), and supporting logistics. In a system-of-systems, the delivery of Deepwater assets are interdependent, thus schedule slippages and uncertainties associated with potential changes in the design and capabilities of any one asset could increase the overall risks that the Coast Guard might not meet its expanded homeland security performance requirements within given budget parameters and milestone dates. The Coast Guard also used a system integrator—which can give the contractor extensive involvement in requirements development, design, and source selection of major system and subsystem subcontractors. The Deepwater program is also a performance-based acquisition, meaning that it is structured around the results to be achieved rather than the manner in which the work is performed. If performance-based acquisitions are not appropriately planned and structured, there is an increased risk that the government may receive products or services that are over cost estimates, delivered late, and of unacceptable quality.

Our reported concerns and related recommendations in 2004 and in subsequent assessments in 2005 and 2006 have centered on three main areas: program management, contractor accountability, and cost control through competition. In the area of program management, among other things, our prior work has found that Integrated Product Teams (IPTs)—the Coast Guard's primary tool for managing the program and overseeing the contractor—have struggled to effectively carry out their missions. We recommended that, among other things, Coast Guard improve the IPTs by initiating actions to establish timely charters and training. In terms of contractor accountability, in 2004 we found that the Coast Guard had not developed quantifiable metrics to hold the system integrator accountable for its ongoing performance, the process by which the Coast Guard assessed performance after the first year of the contract lacked rigor, and the Coast Guard had not begun to measure the system integrator's performance on the three overarching goals of the Deepwater program—maximizing operational effectiveness, minimizing total ownership costs, and satisfying the customer. Thus, one recommendation we made for improving contractor accountability was to devise a timeframe for measuring the contractor's progress toward improving operational effectiveness. We also reported in 2004 that, although competition among subcontractors was a key vehicle for controlling costs, the Coast Guard had neither measured the extent of competition among the suppliers of Deepwater assets nor held the system integrator accountable for taking steps to achieve competition. Consequently, we recommended that Coast Guard develop a plan to hold the contractor accountable for ensuring adequate competition among suppliers. While we recognize that the Coast Guard has taken steps to address our findings and recommendations, aspects of the Deepwater program will require continued attention.

In addition to the Deepwater program management issues discussed above, the Coast Guard is facing operational challenges because of performance and design problems with Deepwater patrol boats. Specifically, the conversion of legacy 110-foot patrol boats to upgraded 123-foot patrol boats was stopped at eight hulls (rather than the entire fleet of 49) due to deck cracking, hull buckling, and shaft alignment problems. These patrol boat conversion problems ultimately led the Coast Guard to suspend all normal operations of the eight converted 123-foot patrol boats on November 30, 2006. The Coast Guard is now exploring options to address the resulting short-term operational gaps. There have also been design problems with the new Fast Response Cutter (FRC), intended to replace all 110-foot and 123-foot patrol boats. In February 2006, the Coast Guard suspended design work on the FRC due to design risks such as excessive weight and horsepower requirements.[3] In moving forward with the FRC acquisition as planned, the Coast Guard will end up having to operate two classes of FRCs—which has resulted in a slippage of the anticipated FRC delivery date. One class will be based on an adapted design from a patrol boat already on the market and another class that would be redesigned to address the problems in the original FRC design plans. Thus, the Coast Guard is also facing longer-term operational gaps related to its patrol boats. As with the 123-foot patrol

[3] GAO, *Coast Guard: Status of Deepwater Fast Response Cutter Design Efforts,* GAO–06–764 (Washington, D.C.: June 23, 2006).

boats, the Coast Guard is looking at options to address these long-term operational gaps.

Background

For about a decade, the Coast Guard has been developing an Integrated Deepwater System (or Deepwater) acquisition program, a long-term plan to replace or modernize its fleet of vessels and aircraft. Many of these legacy assets are at or approaching the end of their estimated service lives. Deepwater is the largest and most complex acquisition project in the Coast Guard's history. The acquisition is scheduled to include the modernization and replacement of an aging fleet of over 90 cutters and 200 aircraft used for missions that generally occur beyond 50 miles from the shore. As originally conceived, Deepwater was designed around producing aircraft and vessels that would function in the Coast Guard's traditional at-sea roles, such as interdicting illicit drug shipments or rescuing mariners from difficulty at sea.

After the terrorist attacks on September 11, 2001, however, these aircraft and vessels began taking on additional missions related to protection of ports, waterways, and coastal areas. As a result, the Coast Guard began revising the Deepwater implementation plan to provide replacement assets that could better address these added responsibilities. In August 2005, the Coast Guard issued the revised Deepwater implementation plan detailing the assets it planned to modify or acquire, along with the proposed costs and schedules for doing so. Then, in February 2006, the Coast Guard again updated its Deepwater plan to align with its Fiscal Year 2007 budget submissions. The revised plan increased overall program costs from the original estimate of $17 billion to $24 billion. Overall, the acquisition schedule was lengthened by 5 years, with the final assets now scheduled for delivery in 2027.[4]

Coast Guard's Acquisition Approach to Deepwater Program

In 2001, we described the Deepwater program as "risky" due to the unique, untried acquisition strategy for a project of this magnitude within the Coast Guard. The approach included the development of a system-of-systems, a single system integrator, and a performance-based contract.

System-of-Systems

Rather than using the traditional approach of replacing classes of ships or aircraft through a series of individual acquisitions, the Coast Guard chose to use a system-of-systems acquisition strategy that would replace its deteriorating assets with a single, integrated package of aircraft, vessels, and unmanned aerial vehicles, to be linked through systems that provide C4ISR,[5] and supporting logistics. Through this approach, the Coast Guard hoped to avoid "stovepiping" the acquisition of vessels and aircraft, which might lead to a situation where they could not operate optimally together.

Our past work on Deepwater noted that decisions on air assets were made by one subcontractor, while decisions regarding surface assets were made by another subcontractor. This approach can lessen the likelihood that a system-of-systems outcome will be achieved if decisions affecting the entire program are made without the full consultation of all parties involved. Our more recent work on the Fast Response Cutter (FRC)—which is discussed in more detail later—indicated that changes in the design and delivery date for the FRC could affect the operations of the overall system-of-systems approach. Because the delivery of Deepwater assets are interdependent within the system-of-systems acquisition approach, schedule slippages and uncertainties associated with potential changes in the design and capabilities of the new assets have increased the risks that the Coast Guard may not meet its expanded homeland security performance requirements within given budget parameters and milestone dates.

System Integrator

In June 2002, the Coast Guard awarded the Deepwater contract to Integrated Coast Guard Systems (ICGS). ICGS—a business entity jointly owned by Northrop Grumman and Lockheed Martin—is a system integrator, responsible for designing, constructing, deploying, supporting, and integrating the Deepwater assets to meet Coast Guard requirements. This type of business arrangement can give the contractor extensive involvement in requirements development, design, and source se-

[4] GAO, *Coast Guard: Changes to Deepwater Plan Appear Sound, and Program Management Has Improved, but Continued Monitoring is Warranted,* GAO–06–546 (Washington, D.C.: April 28, 2006).

[5] C4ISR refers to command, control, communications, computer, intelligence, surveillance, and reconnaissance.

lection of major system and subsystem subcontractors. This management approach of using a system integrator has been used on other government programs that require system-of-systems integration, such as the Army's Future Combat System, a networked family of weapons and other systems.

Government agencies have turned to the system integrator approach when they believe they do not have the in-house capability to design, develop, and manage complex acquisitions. Giving contractors more control and influence over the government's acquisitions in a system integrator role creates a potential risk that program decisions and products could be influenced by the financial interest of the contractor—which is accountable to its shareholders—which may not match the primary interest of the government, maximizing its return on taxpayer dollars. The system integrator arrangement creates an inherent risk, as the contractor is given more discretion to make certain program decisions. Along with this greater discretion comes the need for more government oversight and an even greater need to develop well-defined outcomes at the outset.

Performance-Based Acquisition

The Deepwater program has been designated as a performance-based acquisition. When buying services, Federal agencies are currently required to employ—to the maximum extent feasible—this concept, wherein acquisitions are structured around the results to be achieved as opposed to the manner in which the work is to be performed. That is, the government specifies the outcome it requires while leaving the contractor to propose decisions about how it will achieve that outcome. Performance-based contracts for services are required to include a performance work statement; measurable performance standards (*i.e.,* in terms of quality, timeliness, quantity, *etc.*) as well as the method of assessing contractor performance against these standards; and performance incentives, where appropriate. If performance-based acquisitions are not appropriately planned and structured, there is an increased risk that the government may receive products or services that are over cost estimates, delivered late, and of unacceptable quality.

Deepwater Indicative of Broader, Systemic Acquisition Challenges

Some of the problems the Coast Guard is experiencing with the Deepwater program (as discussed later in this statement), in principle, are indicative of broader and systemic challenges we have identified for complex, developmental systems. These challenges, based mostly on our reviews of Department of Defense programs, include:

- Program requirements that are set at unrealistic levels, then changed frequently as recognition sets in that they cannot be achieved. As a result, too much time passes; threats may change; and/or members of the user and acquisition communities may simply change their minds. The resulting program instability causes cost escalation, schedule delays, fewer quantities, and reduced contractor accountability.
- Program decisions to move into design and production are made without adequate standards or knowledge.
- Contracts, especially service contracts, often do not have measures in place at the outset in order to control costs and facilitate accountability.
- Contracts typically do not accurately reflect the complexity of projects or appropriately allocate risk between the contractors and the taxpayers.
- The acquisition workforce faces serious challenges (*e.g.,* size, skills, knowledge, and succession planning).
- Incentive and award fees are often paid based on contractor attitudes and efforts versus positive results, such as cost, quality, and schedule.
- Inadequate government oversight results in little to no accountability for recurring and systemic problems.

Previous GAO Recommendations Have Focused on Three Areas

Our assessment of the Deepwater program in 2004 found that the Coast Guard had not effectively managed the program or overseen the system integrator.[6] We specifically made 11 recommendations to the Coast Guard, which can found at Table 1 on page 12. Our reported concerns in 2004 and in subsequent assessments in 2005 and 2006 have centered on three main areas: program management, contractor ac-

[6] GAO–04–380.

countability, and cost control through competition. Each of these three areas is discussed in more detail below.

While we recognize that the Coast Guard has taken steps to address our findings and recommendations, aspects of the Deepwater program will require continued attention. A project of this magnitude will likely continue to experience other problems as more becomes known. We have ongoing work to monitor and evaluate the Coast Guard's efforts.

Program Management and the Importance of Integrated Product Teams

Our previous work and recommendations were based on concerns about the Coast Guard's program management. For example, we reported in 2004 that the Coast Guard had not adequately communicated to its operational personnel decisions on how new and old assets would be integrated and how maintenance responsibilities would be divided between government and contractor personnel. We also found that the Coast Guard had not adequately staffed its program management function. Despite some actions taken to more fully staff the Deepwater program, we reported that in January 2005 shortfalls remained. While 244 positions were assigned to the program, only 206 were filled, resulting in a 16 percent vacancy rate.

One of the key program management concerns we had, and one that is worth highlighting, is the effectiveness of IPTs. IPTs are the Coast Guard's primary tool for managing the Deepwater program and overseeing the system integrator. Our past work has found that IPTs can improve both the speed and quality of the decision-making process.[7] They can make decisions involving significant trade-offs without relying unduly on other organizations for information or approval. In our prior work, we studied successful IPTs in commercial firms and found that effective teams have: (1) expertise to master different facets of product development, (2) responsibility for day-to-day decisions and product delivery, (3) key members who are either physically colocated or connected through virtual means to facilitate team cohesion and the ability to share information, and (4) control over their membership, with membership changes driven by each team's need for different knowledge.

We identified two elements as essential to determining whether a team is in fact an IPT: the knowledge and authority needed to recognize problems and make cross-cutting decisions expeditiously. Knowledge is sufficient when the team has the right mix of expertise to master the different facets of product development. Authority is present when the team is responsible for making both day-to-day decisions and delivering the product. If the programs are experiencing problems, the teams either did not have the authority or the right mix of expertise to be considered IPTs. If a team lacks expertise, it will miss opportunities to recognize potential problems early; without authority, it can do little about them.

The Deepwater IPTs—comprised of Coast Guard, ICGS, and subcontractor employees from Lockheed Martin and Northrop Grumman—are responsible for overall program planning and management, asset integration, and overseeing the delivery of specific Deepwater assets. We reported in 2004 that the teams had struggled to effectively carry out their missions. We identified four major issues that had impeded the effective performance of the IPTs:

- First, the teams lacked timely charters to vest them with authority for decision-making. More than merely a paperwork exercise, sound IPT charters are critical because they detail each team's purpose, membership, performance goals, authority, responsibility, accountability, and relationships with other groups, resources, and schedules.
- Second, the system integrator had difficulty training IPT members in time to ensure that they could effectively carry out their duties, and program officials referred to IPT training as deficient. IPT training is to address, among other issues, developing team goals and objectives, key processes, use of a web-based system intended to facilitate communication, and team rules of behavior. According to a Coast Guard evaluation report from December 2002, IPT training had been implemented late, which contributed to a lack of effective collaboration among team members.
- Third, very few of the operating IPTs were entirely colocated, (that is, all members were not in the same building) even though the Coast Guard's Deepwater program management plan identified colocation of IPT members as a key program success factor, along with effective communications within and among teams. ICGS developed a web-based system for government and contractor em-

[7] GAO, *Best Practices: DOD Teaming Practices Not Achieving Potential Results,* GAO–01–510 (Washington, D.C.: April 10, 2001).

ployees to regularly access and update technical delivery task order[8] information, training materials, and other program information, in part to mitigate the challenges of having team members in multiple locations. However, the Deepwater program executive officer reported that, while the system had great potential, it was a long way from becoming the virtual enterprise and collaborative environment required by the contractor's statement of work.

- Fourth, we reported that most of the Deepwater IPTs had experienced membership turnover and staffing difficulties, resulting in a loss of team knowledge, overbooked schedules, and crisis management. In a few instances, such as the National Security Cutter and maritime patrol aircraft, even the IPT leadership had changed.

In 2005, we found that the Coast Guard had taken some positive steps in that: (1) the IPTs had been restructured, (2) 20 IPTs had charters setting forth their purpose, authority, and performance goals, and (3) entry-level training had been implemented for team members. However, some of the problems continued. A Coast Guard assessment of the system integrator's performance found that roles and responsibilities in some teams continued to be unclear. Decisionmaking was to a large extent stove-piped, and some teams lacked adequate authority to make decisions within their realm of responsibility. One source of difficulty for some team members was that each of the two major subcontractors has used its own management systems and processes to manage different segments of the program.

In 2005, we also noted that decisions on air assets were made by Lockheed Martin, while decisions regarding surface assets were made by Northrop Grumman. We reported that this approach can lessen the likelihood that a system-of-systems outcome will be achieved if decisions affecting the entire program are made without the full consultation of all parties involved. In 2006, we reported that Coast Guard officials believed collaboration among the subcontractors to be problematic and that ICGS wielded little influence to compel decisions among them. For example, when dealing with proposed design changes to assets under construction, ICGS submitted the changes as two separate proposals from both subcontractors rather than coordinating the separate proposals into one coherent plan. According to Coast Guard performance monitors, this approach complicates the government review of design changes because the two proposals often carried overlapping work items, thereby forcing the Coast Guard to act as the system integrator in those situations.

Contractor Accountability

In 2004, we also made recommendations related to contractor accountability. We found that the Coast Guard had not developed quantifiable metrics to hold the system integrator accountable for its ongoing performance and that the process by which the Coast Guard assessed performance after the first year of the contract lacked rigor. For example, the first annual award fee determination was based largely on unsupported calculations. Despite documented problems in schedule, performance, cost control, and contract administration throughout the first year, the program executive officer awarded the contractor an overall rating of 87 percent, which fell in the "very good" range. This rating resulted in an award fee of $4.0 million of the maximum of $4.6 million.

We also reported in 2004 that the Coast Guard had not begun to measure the system integrator's performance on the three overarching goals of the Deepwater program—maximizing operational effectiveness, minimizing total ownership costs, and satisfying the customers. Coast Guard officials told us that metrics for measuring these objectives had not been finalized; therefore the officials could not accurately assess the contractor's performance against the goals. However, at the time, the Coast Guard had no timeframe in which to accomplish this measurement.

Cost Control Through Competition

Further, our 2004 report had recommendations related to cost control. We reported that, although competition among subcontractors was a key vehicle for controlling costs, the Coast Guard had neither measured the extent of competition among the suppliers of Deepwater assets nor held the system integrator accountable for taking steps to achieve competition.[9] As the two major subcontractors to ICGS, Lockheed Martin and Northrop Grumman have sole responsibility for determining whether to provide the Deepwater assets themselves or to hold competitions—decisions commonly referred to as "make-or-buy." We noted that the Coast Guard's

[8] In the context of the Deepwater contract, the Coast Guard considers delivery task orders as orders for supplies or services placed against the contract.

[9] GAO–04–380.

hands-off approach to make-or-buy decisions and its failure to assess the extent of competition raised questions about whether the government would be able to control Deepwater program costs.

Coast Guard Efforts Related to GAO Recommendations

We made 11 recommendations in 2004 in the areas of management and oversight, contractor accountability, and cost control through competition. *Table 1* provides details on these recommendations.

Table 1. Status of GAO Recommendations to the U.S. Coast Guard Regarding Management of the Deepwater Program, as of April 28, 2006

Areas of concern	Recommendations to the U.S. Coast Guard	Recommendation status
Key components of management and oversight are not effectively implemented	Put in place a human capital plan to ensure adequate staffing of the Deepwater program.	Implemented
	Improve integrated product teams (IPTs) responsible for managing the program by providing better training, approving charters for sub-IPTs, and improving systems for sharing information between teams.	Partially implemented
	Provide field operators and maintenance personnel with timely information and training on how the transition to Deepwater assets will occur and how maintenance responsibilities are to be divided between the system integrator and Coast Guard personnel.	Partially implemented
Procedures for ensuring contractor accountability are inadequate	Develop measurable award fee criteria consistent with guidance from the Office of Federal Procurement Policy.	Implemented
	Provide for better input from U.S. Coast Guard performance monitors.	Implemented
	Hold the system integrator accountable in future award fee determinations for improving effectiveness of the IPTs.	Implemented
	Establish a baseline for determining whether the acquisition approach is costing the government more than the traditional asset replacement approach.	Will not be implemented
	Establish a timeframe for when the models and metrics will be in place with the appropriate degree of fidelity to be able to measure contractor's progress toward improving operational effectiveness.	Partially implemented
	Establish criteria to determine when to adjust the project baseline and document the reasons for change.	Partially implemented
Control of future costs through competition remains at risk because of weak oversight	For subcontracts over $5 million awarded by the system integrator to the two major subcontractors, require notification to the Coast Guard about decision to perform the work in-house rather than contracting it out.	Implemented
	Develop a comprehensive plan for holding the system integrator accountable for ensuring adequate competition among suppliers.	Partially implemented

Source: GAO–04–380 and GAO–06–546.

In April 2006, we reported that the Coast Guard had implemented five of the recommendations. Actions had been taken to:

- revise the Deepwater human capital plan;
- develop measurable award fee criteria;
- implement a more rigorous method of obtaining input from Coast Guard monitors on the contractor's performance;
- include in the contractor's performance measures actions taken to improve the integrated product teams' effectiveness; and require the contractor to notify the Coast Guard of subcontracts over $10 million that were awarded to the two major subcontractors. [10]

The Coast Guard had begun to address five other recommendations by:

- initiating actions to establish charters and training for integrated product teams;
- improving communications with field personnel regarding the transition to Deepwater assets;
- devising a timeframe for measuring the contractor's progress toward improving operational effectiveness;
- establishing criteria to determine when to adjust the project baseline; and
- developing a plan to hold the contractor accountable for ensuring adequate competition among suppliers.

In our April 2006 report, we determined that, based on our work, these recommendations had not been fully implemented.

The Coast Guard disagreed with and declined to implement one of our 11 recommendations: to establish a baseline to determine whether the system-of-systems acquisition approach is costing the government more than the traditional asset replacement approach.

We will continue to review Deepwater implementation and contract oversight. We are currently reviewing aspects of the Deepwater program for the House and Senate Appropriations Committees' Subcommittees on Homeland Security. [11] As part of that effort, we will review the status of the Coast Guard's implementation of our 2004 recommendations on Deepwater contract management for improving Deepwater program management, holding the prime contractor accountable for meeting key program goals and facilitating cost control through competition. We will share our results with those committees in April of this year.

Performance and Design Problems Creating Operational Challenges for Coast Guard

In addition to overall management issues discussed above, there have been problems with the performance and design of Deepwater patrol boats that pose significant operational challenges to the Coast Guard.

Performance Problems With the Converted 123-Foot Patrol Boats

The Deepwater program's conversion of the legacy 110-foot patrol boats to 123-foot patrol boats has encountered performance problems. The Coast Guard had originally intended to convert all 49 of its 110-foot patrol boats into 123-foot patrol boats in order to increase the patrol boats' annual operational hours. This conversion program was also intended to add additional capability to the patrol boats, such as enhanced and improved C^4ISR capabilities, as well as stern launch and recovery capability for a small boat. However, the converted 123-foot patrol boats began to display deck cracking and hull buckling and developed shaft alignment problems, and the Coast Guard elected to stop the conversion process at eight hulls upon determining that the converted patrol boats would not meet their expanded post-9/11 operational requirements.

The performance problems illustrated above have clear operational consequences for the Coast Guard. The hull performance problems with the 123-foot patrol boats led the Coast Guard to remove all of the eight converted normal 123-foot patrol boats from service effective November 30, 2006. The Commandant of the Coast Guard has stated that having reliable, safe cutters is "paramount" to executing the

[10] Our 2004 recommendation was to use a $5 million threshold because Lockheed Martin, one of the major subcontractors, uses that amount as the threshold for considering its suppliers major. The Coast Guard decided to use the $10 million threshold based on the criteria in the make-or-buy program provisions of the Federal Acquisition Regulation.

[11] This work is based on Conference Committee Report language (H.R. Conf. Rep. No. 109–699, at 113 (2006)) incorporating GAO reporting provisions contained in a House Appropriations Committee Report (H.R. Rep. No. 109–476, at 64 (2006)).

Coast Guard's missions.[12] Thus, removing these patrol boats from service impacts Coast Guard's operations in its missions, such as search and rescue and migrant interdiction. The Coast Guard is exploring options to address operational gaps resulting from the suspension of the 123-foot patrol boat operations.

Design Problems With the Fast Response Cutter

The FRC—which was intended as a long-term replacement for the legacy 110-foot patrol boats—has experienced design problems that have operational implications. As we recently reported, the Coast Guard suspended design work on the FRC due to design risks such as excessive weight and horsepower requirements.[13] Coast Guard engineers raised concerns about the viability of the FRC design (which involved building the FRC's hull, decks, and bulkheads out of composite materials rather than steel) beginning in January 2005. In February 2006, the Coast Guard suspended FRC design work after an independent design review by third-party consultants demonstrated, among other things, that the FRC would be far heavier and less efficient than a typical patrol boat of similar length, in part, because it would need four engines to meet Coast Guard speed requirements.

One operational challenge related to the FRC, is that the Coast Guard will end up with two classes of FRCs. The first class of FRCs to be built would be based on an adapted design from a patrol boat already on the market to expedite delivery. The Coast Guard would then pursue development of a follow-on class that would be completely redesigned to address the problems in the original FRC design plans. Coast Guard officials now estimate that the first FRC delivery will slip to Fiscal Year 2009, at the earliest, rather than 2007 as outlined in the 2005 Revised Deepwater Implementation Plan. Thus, the Coast Guard is also facing longer-term operational gaps related to its patrol boats. In regard to the suspension of FRC design work, as of our June 2006 report, Coast Guard officials had not yet determined how changes in the design and delivery date for the FRC would affect the operations of the overall system-of-systems approach.

We will continue to review Coast Guard operational challenges related to Deepwater patrol boats. Our ongoing work for the House and Senate Appropriations Committees' Subcommittees on Homeland Security includes a review of the history of the contract, design, fielding, and grounding of the converted 123-foot patrol boats and operational adjustments the Coast Guard is making to account for the removal from service of the 123-foot patrol boats.

Madam Chair, that concludes my statement. I would be happy to respond to any questions you or other members of the Subcommittee may have at this time.

Senator CANTWELL. Thank you, Mr. Caldwell, and thank you to all of the panelists. We're going to do 5-minute rounds, here. And we do have a second panel, and I think we're going to have some votes later this afternoon, so I want to make sure we all have enough time. So we'll make a judgment after the first round, whether we do two rounds of questions with this panel, or go to the second panel.

So, I want to start—Mr. Skinner and Mr. Caldwell—you both have been students of this Deepwater Program and the system integrator approach.

First of all, I just want to clarify, Mr. Skinner, have you gotten access to all of the e-mails and documentation that you need from the Coast Guard?

Mr. SKINNER. Yes, we have.

Senator CANTWELL. You have, at this point in time, all the doc——

Mr. SKINNER. At this point in time, we have, yes.

Senator CANTWELL. And, Admiral Allen, if the Committee would like to see additional e-mails or correspondence, I'm assuming you would comply with that, thank you.

[12] U.S. Coast Guard, Office of Public Affairs, *Coast Guard Suspends Converted Patrol Boat Operations,* November 30, 2006.

[13] GAO–06–764.

To this recommendation by the Defense University, they have basically said that this issue of lead-system integrator is problematic. I think that Mr. Caldwell and Mr. Skinner, you were saying the same things.

But, could you elaborate on whether you think that you can just make small changes to the current contract moving forward with that system integrator? Or whether we need to make more substantive changes to get this approach right?

Mr. SKINNER. I believe there are going to have to be some substantive changes made to the contract to make it an effective initiative. First of all, we're going to have——

Senator CANTWELL. I don't mean with, I mean, not necessarily with the current contractee, but with any individual, any organization. Obviously, the debate here is on the normal procurement process that the Coast Guard had followed prior to this recommendation, this novel idea of using a system of taking the SAM and throwing it out, and using the system integration to get the expertise to the Coast Guard.

Mr. SKINNER. Yes, for one thing, I think the system of systems concept is a good one. I think using any performance-based contract mechanism is a good one. I think it's very important that the government partner with the private sector, they bring energy, they bring innovation, they bring a lot to the table that we in the government cannot provide. So I think, conceptually, it's an excellent idea. Any time you do something like this, there's going to be risk associated with it, it needs to be managed closely. The contract terms have to be well-defined, the government needs to be able to be in a position to dictate to the contractor, or have at least some involvement or insight to sub-contract management and make-or-buy decisions, things of that nature.

Senator CANTWELL. The system integrator giving a contract to themselves? Obviously, we saw in the Fast Response Cutter, you know $25 million later we had to stop work on that particular design. That was an area where they didn't necessarily have the expertise, but contracted with themselves, is that correct?

Mr. SKINNER. That is correct. In this regard, I think that the Coast Guard or the government needs to play a larger role in managing these particular type of contracts. We need to have the technical expertise to review designs, to make decisions, and not rely on a contractor to tell us what we want, and what we're going to receive.

It's our responsibility to define what we want, and what we want to receive. If they propose something that doesn't meet our standards, then we should not accept it, we should not move forward.

We need third-party assessments. I understand, under the FRC—we did not do any work there yet, GAO has been doing some work there—it's my understanding that we knew early on that there may be some problems with the FRC. We need independent assessments to guide us, as to whether we should proceed, and invest, considerable resources early on in the process, and not wait 2 years down the road before we realize that, that the end product is not going to work.

Senator CANTWELL. Mr. Caldwell?

Mr. CALDWELL. I would agree with Mr. Skinner, GAO is doing some broader work on both defense and other DHS programs to look at the concept of this lead-system integrator. We're not ready to report on that work yet.

But the concept itself can be sound, it's the implementation of it that has been problematic. Getting some independent input, whether through the Coast Guard's own technical authority, or through third-party assessments, is one way to reduce risks.

One of the key things that the Coast Guard lost along the way was the voice of their own technical authority, and Admiral Allen has worked to reassert that technical authority. I think it will be very interesting to hear Captain Jarvis' statement later today about the erosion of the Coast Guard's internal technical authority and the impact he said that had to give free reign to the lead integrator.

Senator CANTWELL. Isn't that a little bit of an understatement, Mr. Caldwell? Given the millions of dollars that we are now seeing in three different vessels that aren't performing, either because of design, or because of now, structural questions for the future?

Mr. CALDWELL. Perhaps it is an understatement, but we have noted these types of flaws in the program. For example, we noted that one of the key things that have been missing has been cost control. We have a situation now where the Coast Guard is not in a position to adequately measure or ensure cost control through subcontracting—that should be a part of the structure that is being put in place right now. There are also weaknesses in terms of contractor accountability. As Mr. Skinner said, you can bring that problem back to the requirements, and how well those are defined, or how poorly they're defined, in this case.

Senator CANTWELL. Your area of expertise is in homeland security as well?

Mr. CALDWELL. Correct.

Senator CANTWELL. And, have we seen anything similar to this in other areas of homeland security, or at least this scale? To me, we've moved outside of what had been—you know, if you look at the history of the Coast Guard and their procurements over the—the buoy system, the HEALY—you know, we're talking about a lot smaller acquisitions. And, all of a sudden, this large-scale acquisition comes along, and I'll get more into that theory of why I think that it, perhaps, got to that point, and you're right, abandoned the technical expertise internally. And now, in looking at solutions, you have to go back and ask whether that technical expertise for this large-scale of a program—$24 billion across many assets.

Mr. CALDWELL. There are two other homeland security programs the GAO is doing work on that we have started to raise similar concerns, one is the SBI Net Program, and the other one is the Secure Flight Program.

Senator CANTWELL. So, are you seeing similar issues?

Mr. CALDWELL. We are seeing similar issues.

Senator CANTWELL. Thank you.

Senator Snowe?

Senator SNOWE. Admiral Allen, in reading through the Inspector General's report, and looking through the time-line first it was in March 2004, that the Coast Guard Chief Engineer raised signifi-

cant concerns with the structural design of the NSC, and the analysis was supported by two renowned Naval engineers.

And then in January 2005, another internal Coast Guard memo states that several of the issues remain which degrade the operational capability, reduce the NCS service life to less than 30 years, I know that's an issue in dispute, whether or not that was the ultimate goal was 20 years, 30 years and that's something we have to talk about, and also in the operational days, as opposed to 230 to 175 to 180—but nevertheless, that was the original goal of the NCS.

Finally, at a briefing delivered to the Coast Guard Commandant in May 2006, it might have been—is that before you came on? It must have been, just shortly before you came on. More than 2 years after the issues regarding the NSC were first raised, the Deepwater program manager concludes the NCS would not be compliant with the performance requirements.

Through this whole period, work continued on the NSC. The Coast Guard's response, and the IG report is widely continued, where pre-production activities were already underway, any disruption in the normal production effort would have been very costly. The independent analysis has provided conclusive evidence of deficiencies that the systems integrator would be responsible to correct them—not at their cost, I gather.

Given the uncertainty of the structural concerns, and the urgency of delivering the NSC, the Program Office decided to proceed with production.

Knowing that there was an ongoing, serious debate about the National Security Cutter—and we knew that within—we're going to hear testimony from the subsequent panel, regarding that back as far as 2004, Mr. Caldwell said 2003—why is it? What is your understanding as to why the Coast Guard continued?

I mean, this is a major problem. You know, when you're talking about rising costs from $500 to $700 to $900 million, in the final analysis it is still undetermined who is going to pay for this. I understand we're talking about a cost-plus in this instance, so for the first two cutters we had to do these modifications. Obviously that was understood, certainly nothing was brought before this committee. That's what's so disturbing.

Not brought before this committee. About all of these modifications, they said, "Well, we'll do it after we construct the NSC." And not even to meet the 30-year life, or the operational days, the original goal of 230 days. And we've just got undetermined costs now.

So what is it that happened within the Coast Guard that would have allowed this to continue, unabated for such a long period of time?

Admiral ALLEN. I think there are two things, Senator. One is the decision itself, and then the documentation of the decision. The Inspector General has pointed out that there is no auditable and traceable record, and one of the things that's very frustrating in this is—and I think it was generally well-known in the Coast Guard, and I'm going to characterize the decision because it was documented, and it is not auditable. But to the best of my knowledge, my assessment at the time would have been the impact on schedule, and the implications for cost were considered to be unre-

coverable, and any issues associated with fatigue-life could be retro-fitted back into the first and second hulls, added to the design of the third hull.

Lacking a business case analysis, a decision memo, anything that could be audited by the IG has been problematic. I can tell you this—just because I was in staff meetings and was privy to the discussions, it was known that the decision was to proceed, and retrofitting the design changes that might be required in the first or second hull, that was not documented, and therefore is not traceable or auditable.

Two other issues that you raised, the first one—days away from home port—the Inspector General and I both agree there was ambiguity in the contract. The contract established that the cutter would be away from home port for 230 days, the remaining days would be allocated for maintenance. If you take out transit times, port calls during patrols and so forth, that yields you about 185 days on mission, if you will, in the sea state by which the models were subjecting the hulls to for developing the fatigue-life standards.

This has been a subject of some misconceptions, ambiguity, and so forth. We have clarified that in the contract, and reported that to the IG. But, by the contract, it is 230 days away from home port, 185 days on station, conducting mission, and those are the parameters by which the models are applied for, how long the sea stay would act on the hull for the purpose of determining the fatigue-life. If you use 230 days, it requires a much longer fatigue-life than it would for 185 days, to achieve 30 years.

Senator SNOWE. Mr. Skinner, what is your response to that? On the fatigue-life?

Mr. SKINNER. The contract was very clear in saying that the specifications we were going to construct—we, the government—were going to construct a cutter that would have an underway capability of 230 days. That, if you use the rules of navigation, when you say 230 days underway, you're saying "on mission," "on assignment," "anchors up."

The Contracting Officer, the Program Manager, and the Assistant Commandant for Systems all were operating under the assumption that this vessel was being built to be underway for 230 days. It was not brought to light, at least in formal documentation, that there was confusion that no, we were talking about 230 days away from home port, 185 days at sea. We brought this to the Coast Guard's attention, saying that there is confusion within the Coast Guard, confusion with those that are assessing the capability of the vessel, Carderock and others, and unless you clarified—and if you, if your intention was to make it 185 days and then 230 days away from home port, then it needs—you need to, sort of, state that in the contract, and you need to do that now. In which, I understand that adjustment has been made to the contract.

Admiral ALLEN. Senator, if I could just make one clarifying comment, and I'd be glad to provide a more extensive answer for the record. We issued a task order to Carderock, an air-to-surface warfare center, to conduct a finite element analysis and do an analysis of the fatigue-life of the ship. We did not prescribe to them the number of underway days in the work order that was issued to

them. They assumed 230 days underway in the operating environment, because of ambiguities in the contract.

[The information referred to follows:]

The premise for this is:

230 DAFHP—new Days Away From Home Port (DAFHP) target.
185 DAFHP—is the current fleet target.

In terms of on station time:

230 DAFHP translates into approximately 170–180 days on station annually.
185 DAFHP translates into approximately 100–120 days on station annually.

170–180 days on station in the North Pacific will involve significantly more stress cycles at a higher stress level than 100–120 days on station in an unspecified location.

When that was returned to the Coast Guard, our technical authority, our Chief Engineer, corrected the model to reflect 185 days, that's when we found out there were differing assumptions, and had to correct them in the contract.

Senator SNOWE. Thank you.

Senator CANTWELL. Thank you.

Senator Lautenberg?

Senator LAUTENBERG. It's hard—it's mystifying here, I must tell you, to figure out what went wrong, to the degree that things have been wrong. Not only have we thrown lots of money at it, but we don't have a satisfactory product to look at, and if I've ever seen an example of the fox in the chicken coop, this is it. I mean, the systems integrator looking at how the job is going and making those decisions: it's outrageous. And that kind of an example, I can't imagine being used in the corporate world, but I guess anything is possible.

Admiral, has this system of contracting outlived its usefulness, given this experience? Turning key procurement decisions over to a contractor that has a vested interest in the manufacturer/developer of a product?

Admiral ALLEN. Well, I would agree with the Inspector General and the General Accountability Office that it's not so much a matter of the strategy or the acquisition vehicle, it is a matter of execution, how the contract is structured, and how it's overseen.

I would tell you this—that there are large, complex acquisitions that need to take place in the Federal Government, and there will be more in the Department of Homeland Security and I think it is a matter of understanding how you do a performance-based systems integration contract, and get it right, because it's a competency we're going to have to have, not only the Coast Guard, but the Department of Homeland Security moving forward.

So, in my view, it's not a matter of the strategy or the approach, it's getting it right with the right oversight and doing our jobs on the side of the Federal Government, Senator.

Senator LAUTENBERG. OK, but the oversight has to be realistically done. Were you aware of any demands or requests by the Coast Guard for help and oversight or auditing what was taking place? Was that request ever put to the Administration leaders through OMB or anyone?

Admiral ALLEN. We have sequentially increased the staffing of the program, and I can give you a multi-year staffing ladder, if you

will, for the record. And we've increased it to the point now, where we have about 300 people in our AC&I budget that are budgeted toward this project. About two-thirds of the interaction on the project staff, the other 100 are out in operating programs where, in our engineering or operations department to help this. We have significantly increased the staffing, actually, I think we're on the threshold where, if properly organized, we can have a significant impact on how this project is managed. But we're going to have to change our business rules and practices.

[The information referred to follows:]

The Deepwater Program is managed using a combination of Coast Guard Active Duty (military), Coast Guard government civilians, and support contractors. The estimated staffing levels by fiscal year are presented below in the table.

Deepwater Program Staffing

	Fiscal Year 2002	Fiscal Year 2003	Fiscal Year 2004	Fiscal Year 2005	Fiscal Year 2006	Fiscal Year 2007
Military	94	123	123	133	147	151
Civilian	71	85	94	117	124	140
Contractor	80	110	130	150	160	160
Total	245	318	347	400	431	451

Senator LAUTENBERG. But, I don't know whether—300 sounds like a lot, but who knows from a distance whether it is——

Admiral ALLEN. It's more than the 160 we started with, sir.

Senator LAUTENBERG. Well, when I hear the confusion about how many days of service the cutter is designed for, it's kind of surprising. I didn't realize the ratio of maintenance to service days for the cutter was quite that high. It comes down almost one for one in a year. Is 185 days some kind of compromise here?

Admiral ALLEN. The breakdown, Senator, is 135 maintenance days, and then 230 days away from home port. The difference in the middle is you don't leave home port and get beamed out to where you're going to do the mission. You have, sometimes to get to the Bering Sea it may take 2 or 3 weeks to get up there, you may have to make a mid-patrol break to take on fuel and for other logistics. But what we're saying is the 230 days away from home port will yield you about 185 days at a remote location, doing the mission. In the meantime, the transit cost, the transit time is accrued.

Senator LAUTENBERG. I don't know whether, as a universal rule, that can be applied to a fairly complicated piece of equipment like these ships, but it seems like a lot of time for not very effective use of the vessel. Are your standards for maintenance and refurbishing similar to that used in the Navy?

Admiral ALLEN. Sir, I might compare it to our current practice, let's take a 378-foot cutter, home port in Alameda. Our standard is to program 185 days away from home port a year. That is constrained by what we call "personnel tempo." By policy, we don't keep our people away from home any more than 185 days a year.

That, constructively, yields us about 135 mission days, if you put in the transit time that I talked about before.

How are you going to get 230 days away from home port, and increase mission time? The National Security Cutters will be the multi-crew.

Senator LAUTENBERG. Admiral, the question I'm going to ask you is before your term as Commandant, but there was a memo from Admiral Brown that was issued in 2004, concerning design deficiencies for the National Security Cutter, are you familiar?

Admiral ALLEN. I am familiar with that.

Senator LAUTENBERG. Now, there was a whistle-blower that was involved with this. Is there whistle-blower protection for people who come forward to point out wrongdoings that are happening? Or, could personnel be afraid of the consequences of their statements or their information being let out?

Admiral ALLEN. Well, there certainly is in my Coast Guard, Senator. I'm not sure if there was a whistle-blower status attached to this, I can tell you this—the issues that related to the National Security Cutter design, in my view, were raised by the engineering community, there was not an effective way to reconcile those inside the Coast Guard, you're going to hear Captain Jarvis talk about that at the next panel.

Senator LAUTENBERG. Right.

Admiral ALLEN. I thought—now, this is my own opinion, now—that we actually created a cultural cleavage in the Coast Guard by the way this thing was organized, where we disenfranchised the technical authority, didn't bring them in to be inclusive in the solution, and therefore, they had no recourse but to keep raising the level of complaint about this to the point where the Chief Engineer actually wrote a memo on it, and then there was no business case analysis, or memo to establish why we would not do that. That is a central point in this whole audit, and the whole decision on the NSC, sir.

Senator LAUTENBERG. Thanks, Admiral.

Thanks, Madam Chair.

Senator CANTWELL. Thank you.

Senator Vitter?

Senator VITTER. Thank you, Madam Chair.

Admiral, I want to go back to the two central themes I mentioned earlier in my opening comments, which both relate to the 110′ to 123′ conversion. When this was happening, were you personally aware of this proposal coming out of the shipyard actually doing the work, that around the fourth ship, they realized, "You know, these old hulls are just too worn and brittle, we need a new solution." And they actually had a specific proposal to provide new hulls for an extra million dollars, $5 million instead of $4 million.

Were you aware of that, and what was the analysis of that, that led to it being rejected?

Admiral ALLEN. Senator, I'm going to give you a two-part answer, if I can. I was, informally aware that Bollinger had created an alternative by which they would renew the hulls, the extended 123′.

I'd like to answer, for the record, whether or not that got to the Coast Guard, and how we acted upon it, because it was interrupted

in my deployment down South for the response to Katrina. So, if I could answer for the record—I was aware that Bollinger had an alternative proposal to renew the hulls.

[The information referred to follows:]

The Coast Guard was aware of one informal presentation by Bollinger Shipyard, Inc. (BSI) to Vice Admiral Peterman (then RADM Peterman) in August 2004. Additionally, ICGS made an informal presentation to the Commandant (Admiral Collins) in September 2004. Both of these informal verbal presentations involved completely replacing the metal hull of the 123′ instead of only replacing a portion of the hull. The Coast Guard did a preliminary review based on the very limited information presented.

Based on that situation, the Coast Guard verbally responded that the risk of so many unknowns did not allow the Coast Guard to make any decision on the value of this approach. BSI and ICGS were advised that if this approach truly had merit, then an "Unsolicited Proposal" in accordance with the Federal Acquisition Regulations should be sent to the Coast Guard. Neither firm submitted an "Unsolicited Proposal."

Senator VITTER. OK, that was rejected. What was the analysis that led to rejecting that? What is being done instead of that? How would you compare, at least in hindsight, the two in terms of cost-benefit?

Admiral ALLEN. Again, if I could go back and provide them for the record, the only reason I can't tell you right now, is I wasn't involved in that final decision. I know that there was a proposal floating around, I don't know how it was officially presented to the Coast Guard, what analysis was done, but I'm more than happy to provide that for the record, Senator.

Senator VITTER. OK, now moving forward in terms of the FRCs, why are we as focused as we seem to be on composite technology, which isn't fully developed, and isn't that focus inconsistent with some of the premises of the Deepwater Program, pull things, develop, off the shelf in a pretty efficient way?

Admiral ALLEN. Well, I think there was always a premium placed on innovation when the contract was awarded, and we're certainly expecting that out of the integrators.

I think, as the Inspector General and the Government Accountability Office have said, the business case up-front and the feasibility and the risk-assessment on the construction of the composite hull probably should have been done sooner than it has been. We have done that now.

The points have been raised by the Inspector General which are well-taken, regarding the third-party analysis, business case analysis, are all part of our business practices at this time.

In regards to the FRC composite hull design, we did that after we had a design presented to us, at that point, our engineers raised concerns, we were going to do a risk mitigation strategy, and that's where we're at now. We actually did the right thing, late. But we are doing that now, and we want to move forward until we're sure that we've reduced the risk, that it's feasible for us to continue. In the meantime, we will continue to pursue a parent-craft design, and fill our patrol boat gap with that, sir.

Senator VITTER. What's the timetable for that analysis, the risk-mitigation analysis that you're talking about?

Admiral ALLEN. We're receiving all of the information right now, I would say it's a matter of weeks, not months.

Senator VITTER. OK. As I understand it, when you compare the traditional steel hull to a composite hull, the argument for the composite is much longer life duration.

Admiral ALLEN. Yes, sir.

Senator VITTER. One of the big arguments for the steel is, much lower cost. When you compare the two, the composite costs many times more, even factoring in longer life. Is that accurate, and is that part of the analysis you're doing?

Admiral ALLEN. Yes, sir. Not being a Naval engineer, that's my understanding, too. And that's—the business case analysis, and the feasibility of the construction, that's what we have to look at right now, and we have to come to a conclusion on the proper way to go with the composite hull, sir.

Senator VITTER. OK.

Mr. Skinner, were you aware as it was happening, or later, with this proposed solution that came out of Bollinger shipyards in terms of the 110′ to 123′ conversion?

Mr. SKINNER. With—I'm not sure I understand your question, Senator. Like I say, we were not reviewing the conversion project in itself.

Senator VITTER. OK.

Mr. SKINNER. We did react to, we did receive allegations that during that conversion, certain equipment was being installed on the cutters, as well as the small boats, the precursors, that did not meet contract specs. In reaction to those allegations—there were four of them actually—we did a review to determine whether the contractor was, in fact, meeting his obligations.

Senator VITTER. OK. Your work on that project, as I understand it, then, didn't have to do with the hulls or the structures.

Mr. SKINNER. That's correct.

Senator VITTER. It had to do with other parts of the project.

Mr. SKINNER. That's correct.

Senator VITTER. OK, fair enough.

Final question, very quickly, for Mr. Caldwell—what role did the lack of appropriations play in the performance of the program, in your opinion?

Mr. CALDWELL. I don't think we've seen problems due to a lack of appropriations. There were a couple of cases, such as the VUAV, where there has been a combination of funding and technology issues. In the case of the VUAV, some officials in the Coast Guard told us that funding issues had prevented them from going forward. However, there were mitigating issues such as concern that the technology was not mature enough, so I'm not sure they would have wanted to go forward, even if the funding was available.

Senator VITTER. OK.

Thank you, Madam Chair.

Senator CANTWELL. Thank you.

Senator Kerry?

Senator KERRY. Thank you, Madam Chair.

Admiral, referring back to the memorandum which Senator Lautenberg mentioned from Admiral Brown to Admiral Stillman. The date on that is March 29, 2004. The title of it is "National Security Cutter Structural Design Deficiencies." Paragraph 1A refers to reduction gear structure, major structural design problems, improper

rocking, deflection of thrust-bearing, foundation, and stiffness. Paragraph B was superstructure buckling, inadequate primary, secondary and tertiary structural stress analysis. Also, superstructure reentry and design issues, discontinuity in the superstructure amid ships leading to early fatigue failure, and superstructure cracking. Paragraph C, sheer strake deck penetrations. There were strength deck stringer plates, oval openings in the strength deck, which are prohibited by another specific reference there in the reduction gear structure, and two, hole control. Inappropriate placement of openings in the longitudinal structural bulkheads.

These are all pretty significant, or certainly not insignificant structural design flaws. They resulted in some $500 million, I believe, of fix. That's March 29, 2004.

And here, in paragraph two, a very important sentence. "Admiral Brown, my concern is that I—over the past 18 months, my subject matter experts have attempted to work, collaboratively, within the IPT structure to resolve these problems, through review, comment and follow-on discussion of the structural design. My concern is that ICGS has unilaterally closed the structural comments and concerns and ended any collaborative effort at the NSC, IPT and sub-IPT level, without reaching resolution." So, they just shut it down.

Now, here's what I don't understand. In 2004, there are these major structural issues. Yet, in May 2006, the Coast Guard decided to extend the contract with Lockheed/Northrop for 43 months, starting in June 2007, without resolution, and given what it knew had happened.

In your written testimony, you state, "The Coast Guard has been, and remains, fully involved in the management of this program, and has made all final and critical decisions." I contrast that to what Mr. Skinner says, which is, "The Deepwater contract essentially empowered the contractor with authority for decisionmaking. Therefore, the Coast Guard was reluctant to exercise a sufficient degree of authority, to influence the design production of its own assets."

Now, I don't think we can have it both ways. We need to understand, which is what, number one, and number two, why would the Coast Guard—given that unbelievable, unilateral obstinence to working with you—why would you renew the contract?

Admiral ALLEN. Yes sir, if I could separate it into two issues.

Senator KERRY. It is two issues, right.

Admiral ALLEN. The NCS fatigue issue, and then the award term.

I've got a diagram here of the major areas of the ship that were impacted that were raised in Admiral Brown's memo. These were also confirmed by Carderock, in fatigue finite element analysis, and these are the bases for our discussions at ICGS right now.

I will tell you, and I'm happy to answer, for the record, to give you a complete status on every one of the issues that was listed in Admiral Brown's memo. A couple of those were taken care of with ICGS, including the most important one, in my view, which were the issues related to the reduction gear, how the engines would sit,

and how much room there would be to adjust those for shaft alignment.

[The information referred to follows:]

Issues From G–S Memo to G–D, dated 29 Mar 2004

(a) Reduction Gear Structure

(1) *Structural Design of Ship Bottom*: Improper rocking deflection or thrust bearing foundation stiffness.

Response: NGSS deepened the girders below the reduction gears. NSWC-Carderock performed an analysis which showed the rocking deflection to be within Renk tolerances.

(b) Superstructure Buckling

(1) *Superstructure Buckling*: Inadequate primary, secondary, and tertiary structural stress analysis.

Response: NGSS increased the superstructure plating between the 01 level and the 02 level.

(2) *Superstructure Re-Entrant Design*: Abrupt discontinuity in the superstructure amidships leading to early fatigue failure and superstructure cracking.

Response: NSWC-Carderock and D&P Fatigue Analyses identified areas of high stress concentrations. The Tiger Team structural modifications will address these concerns on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(c) Sheer Strake Deck Penetrations

(1) *Strength Deck Stringer Plates*: Large elongated oval openings in the strength deck stringer plates which are prohibited by reference (a).

Response: Tiger Team structural modifications will fix large holes in strength deck stringer plate on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(2) *Hole Control*: Inappropriate placement of openings in the longitudinal structural bulkheads prohibited by reference (a).

Response: Some progress has been made in hole control for longitudinal bulkheads. NSWC-Carderock and D&P fatigue analyses identified remaining stress concentrations and Tiger Team structural modifications will fix them on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

Issues From G–SDW Memo to G–DPM–4, dated 04 Jan 2005

(a) *Strength Deck Stringer Plates*: The vent penetration openings in the 01 level stringer strake remain the most serious concern with the WMSL (NSC) design. The inadequate fatigue strength will result in cracks which could propagate and cause the hull girder to fail. This problem is worsened with the penetrations required for the helicopter ASIST system which will be located slightly inboard the vent penetrations.

Response: Tiger Team structural modifications will fix large holes in strength deck stringer plates on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(b) *Superstructure Re-Entrant Design*: ICGS has not provided a valid fatigue analysis of the superstructure re-entrant design. There is a significant risk of cracks developing in the superstructure that could propagate into the strength deck. In a worst case scenario, these cracks could lead to hull girder failure similar to that described above.

Response: The Tiger Team structural modifications will address this issue on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(c) *Shell Fashion Plates*: The ICGS fatigue analysis demonstrates that the fatigue characteristics of the shell fashion plates are marginal even with the incorrect assumptions described in paragraph 2. Also, the fatigue analysis did not consider secondary loads or that fact that the fashion plates above the deck are not stiffened. It is our assessment that the fatigue characteristics of the current fashion plates are inadequate and that any cracks that arise could propagate and lead to hull girder failure.

Response: Tiger Team modifications will address this issue on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(d) *Hangar Racking Strength*: In analyzing the hangar racking strength, ICGS incorrectly assumed zero rotation at the frame ends, which resulted in selecting a smaller frame size than what is actually required. Also, there is large opening in the aft hangar sloping bulkhead for helo control station which was not reflected in the analysis. Additionally, dead loads were not considered in the analysis, which is standard practice. By not properly addressing these deficiencies, cracks in the hangar structure will develop and require continual repair and eventual replacement of structural members.

Response: NSWC-Carderock analysis of the helicopter hangar indicates that the existing structural arrangement is adequate to withstand the expected loads.

(e) *Hole Control*: Progress has been made by relocating some holes in the longitudinal bulkheads, however several access openings remain in key areas where the shear and bending stresses will be greatest. ICGS has not provided a shear flow analysis to demonstrate that the loads in the longitudinal bulkheads generated from hull bending or dry-docking can be safely transferred into transverse bulkheads 44, 64, and 70. There is a significant possibility that the longitudinal bulkheads will fail where they intersect the transverse bulkheads because of a significant reduction in shear area in the longitudinal bulkheads due to the inappropriate location of many doors.

Response: NSWC-Carderock and D&P fatigue analysis validated the remainder of this concern. Tiger Team modifications will address this issue on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(f) *01 Knuckle*: Concern remains that the 01 level structure near the knuckle at Frame 27 has not been properly designed for the resultant eccentric loading and fatigue. A U.S. Navy DDG 51 class ship with a similar knuckle in the 01 level experienced deck buckling, which required a very expensive back fit.

Response: NSWC-Carderock and D&P fatigue analysis validated this concern. Tiger Team modifications will address this issue on NSC 3–8. Fixes for NSC 1 and 2 are under development and will be planned for installation during the cutters' first Dry Dock Availability.

(g) *Reduction Gear Structure*: In their analysis of the structure supporting the reduction gears, ICGS improperly modeled the stanchions as infinitely rigid, and the vibration results from this analysis are very close to the tolerances for the reduction gear. If the deflection of the inner-bottom is greater than what is allowed by the reduction gear manufacturer, this will clearly be a warranty issue.

Response: NSWC-Carderock performed an analysis which showed the rocking deflection to be within Renk tolerances.

What I'd like to do is provide you with a line-item list of which ones have been carried over for negotiations for hulls 1 and 2, which ones were reconciled at the time. This, basically, is a pictorial of the major issues. The issues down below in the hull where the reduction gear were at, and then openings in the hull that would facilitate cracking, should the vibrations cause that——

Senator KERRY. I understand that. I understand the issues, and I understand that some of them have been partially resolved, to the tune of very significant amounts of money. The issue here is a procedural one.

Admiral ALLEN. Yes, sir.

Senator KERRY. Why would the Coast Guard renew the contract given such an explicit statement of discontent with the process?

Admiral ALLEN. Yes, sir.

When the contract was awarded in June 2002, the criteria for the next award term was established. You know, in my view, there wasn't enough specificity and clarity in the contract that would allow you to differentiate when this problem occurred, because it was focused on operational effectiveness of the system, total owner-

ship cost, and customer satisfaction, and the evaluation for the next award term was contractually bound by those parameters.

Senator KERRY. But, you didn't have to renew the contract.

Admiral ALLEN. This, we haven't renewed the contract——

Senator KERRY. Let me go—I mean, paragraph three here, I didn't even read the whole memo, but paragraph three talks about the two experts that he saw fit to bring to the table, and he says, I mean, this is Admiral Brown asking for Admiral Stillman to help resolve the issue. He says, "I'm seeking your immediate support in finding a mutually agreeable method for resolving these engineering differences." He brings two experts to the table, a Mr. Silksy, and a Mr. Robert Scott, both very experienced ship designers, *et cetera*.

And provides the enclosures of their analyses. And those enclosures, quote—I'm quoting from the memo, "These enclosures corroborate the findings of my technical experts, and confirm through independent analyses that significant flaws exist in the structural design of the NSC." Now, if significant flaws exist in the design, and they have shut you out in any collaborative effort without reaching a resolution, why would you renew a contract?

Admiral ALLEN. First of all, sir, the contract has not been renewed. What the award term decision was, it created the opportunity in June of this year, to award a contract for 43 months, in terms of that contract, currently under discussion with the contractors. So, we have not renewed the contracts.

Senator KERRY. So, if that is true, that you haven't renewed it—in *The New York Times,* one of your engineers, an Anthony D'Armiento was quoted as saying, "This is the fleecing of America. It is the worst contract arrangement I've seen in my 20-plus years of Naval engineering."

Why would you not, sort of heeding the sequence of analysis of both GAO and the Inspector General put this out to bid? And that's without prejudice, if Northrop and Lockheed want to come back and say, "We can do this better, and here's how we'll do it," they have a right to do it.

But wouldn't we, the taxpayer, wouldn't the folks we represent, and the interests of national security in getting this done, you know, the right way at the right cost, competitively bid, at this point—wouldn't we all be better off?

Admiral ALLEN. Well, sir, that's the work that is around us right now. When I came into the job, one of the tasks we had was to negotiate the terms of the new contract, should it be awarded in June for 43 months? I have both, I have had meetings with both the CEOs of Lockheed Martin, and Northrop Grumman, we have a work group working right now on the potential structure of that contract, should it be awarded, we are at that decision point, and we are working the problem as we speak right now. And I'm happy to come back and discuss it with the Committee when we, our work group is done.

Senator KERRY. Well, fair enough. But, I think it's awfully important—I see my time has gone over, I apologize—awfully important to really stay in touch with us on this, and see if we can't work on it. I'm not trying to, you know, I just think the accountability issue is really pretty critical.

Madam Chairwoman, I don't have time now because of the time thing, but I wanted to ask some questions of both Mr. Skinner and Mr. Caldwell with respect to whether the structure, the contract structure itself, isn't fundamentally flawed. And, it seems to me if you read fairly explicitly, and I don't think you have to read between the lines, to see that there's a power allocation here that's just out of whack, in terms of who gets the accountability and how.

And so, I think we ought to explore that.

Senator CANTWELL. Well, I thank the Senator for that line of questioning, and to point out that we will keep the record open, we are going to move to the next panel because we are going to have a vote later this afternoon.

So, I appreciate each of you and your testimony. We will leave the record open for questions, if you could comply in getting those answers to us in the next 2 weeks, we would appreciate it.

But again, Mr. Caldwell, Mr. Skinner, Admiral Allen, thank you for being here.

And, I'd like to call up the second panel. Dr. Leo Mackay, Vice President and General Manager, Coast Guard Systems, Lockheed Martin, Maritime Systems and Sensors; Mr. Philip A. Teel, President of Northrop Grumman Ship Systems, and Captain Kevin Jarvis, U.S. Coast Guard, retired. If you gentlemen could come up to the table, I would appreciate that.

And if those who would like to leave the hearing would do so quickly, so that we can start this second panel.

And, Captain Jarvis, I think we'll start with you.

Go ahead, Captain Jarvis. Thank you for being here, I know you've traveled a long way to be here at this hearing, so I appreciate it.

STATEMENT OF CAPTAIN KEVIN P. JARVIS, U.S. COAST GUARD, RETIRED

Captain JARVIS. Good afternoon. Chairperson Cantwell, Ranking Member Snowe, and other distinguished members of the Subcommittee, thank you for holding this important hearing concerning the subject that has consumed a good portion of my life for the last 7 years.

I am Kevin Jarvis, a retired—a recent retiree—from the United States Coast Guard, the military organization that I have loved for over 29 years of commissioned service, and proudly wear my retirement pin for all to see.

Because of my continued, unmatched loyalty and love for this magnificent organization, this specific topic, and the unique familiarity I have with many of the Deepwater tactical and strategic decisions, policies and results and outcomes, I've elected to come to testify today after a long train ride from Florida.

In providing this testimony, it is my solitary hope that I can assist you, and the Coast Guard, to make this very important and critically needed asset acquisition program more effective, cost-efficient and transparent, and most importantly—as the good stewards we're supposed to be—more accountable to the American public.

I spent a predominance of my service in Naval engineering and logistics-related assignments. From the deck plates and bilges in three different cutters, selection as the DOT/U.S. Coast Guard 1993

Federal Engineer of the Year, an assignment as the Commanding Officer of the Coast Guard's Engineering Logistics Center, I've seen and/or done virtually everything in naval engineering the Coast Guard could do.

I've acquired four Master's Degrees—two from the University of Michigan in Naval Engineering and Marine Architecture, and also Mechanical Engineering. I was introduced as the G–S Representative to the Deepwater program in November 2000.

The following are my overviews of both my direct observations and experiences while engaging on G–S behalf for 2½ years, at both the strategic heights, and the tactical trenches with the Deepwater program.

G–S supported the Deepwater program, and embodied virtually all of the Coast Guard's engineering and logistics expertise. I was there as the G–S organization, a proven Coast Guard major acquisition, engineering and logistic enabler, was shut out of its traditional acquisition-specified technical roles. I was there when the Deepwater culture was cemented with thick walls of change agent, "Our ends will justify the means, we have the world's best Navy engineers for advice, only contractor insight is needed, not oversight. And the contractor's engineer's work is good enough."

Consequently, 1,000 years of Coast Guard naval engineering technical capabilities were wasted by the poor strategic judgment of the program's original crafters, and the unwillingness of the subsequent program leaders to make the needed deviations.

As a result, the tactical trenches of the program—the integrated process teams—became cauldrons of mistrust for communication, G–D-managed, unilateral decisions against G–S technical warnings, and the ruthless execution of the published schedule at virtually all costs.

I was there watching an impending train wreck, as the 110′ to 123′ conversion progressed at full-speed in the face of numerous G–S-vocal and written, formal engineering objections.

The too-close linkage, and over-reliance by the G–D staff, on the industry partner's "good enough" engineering work and assessment supported a multitude of poor, time-based decisions. The *prima facie* results speak volumes—8 non-operational cutters.

The NSC followed the same path. By continually dismissing GS's engineering concerns, which were documented well before the 2004 Admiral Brown memo, we missed the perfect opportunity to make the needed structural changes prior to any issuance of the NSC, while the NSC was supposedly still on the electronic drawing board.

Instead, we wasted years sending memos back and forth with no real resolution progress in sight. We now have NSC 1 floating, and NSC 2 well along in the construction, with potentially thousands, if not millions, of dollars needed for future corrective actions. This didn't need to happen.

At least the FRC has proven to be a partial success, and not because of any production issue. Because the FRC concept matured after the 123′ and NSC engineering problems, the G–S voice became too important to ignore, when they identified serious design concerns with yet, another, ICGS poorly integrated effort.

Thankfully, the FRC was halted before, what would have been, a third surface mistake being constructed. We just don't have enough money to make these types of design errors.

This oral testimony is primarily focused on the extremely unhealthy relationship within the program, and the resultant engineering issues that spawned from them. But, what's just as troubling is the absence of a viable, or producible asset, or systems of systems logistics plan, after nearly 5 years of critical program and tax dollars being applied.

Similar to the engineering problems, the Deepwater Program has failed to hold the contractor accountable, and the systems integrator has failed to take the needed assertive and corrective role to produce this significant contract deliverable. Although the Coast Guard has a good deal of blame to accept in this regard, the integrator is also very complicit. They just didn't act in the expected capacity as required by the Deepwater contract.

I have a great deal of respect for Admiral Allen's overt leadership and direction to clean up this mess, but I must raise the caution flag—this program, this was a program that believes a deviation to every situation is possible. The very old G–S/G–D roles and responsibilities memo was signed, forwarded, reviewed and approved by four Flag Officers with the combined weight of 10 stars. Yet, it was completely ignored by the Deepwater Program.

I've had extremely limited knowledge of what has happened with the Deepwater Program since I left the service last spring. I'd like to use this fact as a qualifier that some of my following improvement recommendations for your consideration might already have taken place.

I have read the DHS IG report, and Admiral Allen's testimony on the subject, and I wholeheartedly agree with the IG's finding and the Admiral's initial corrective steps to fix this, the multitude of Deepwater problems.

Of the Admiral's actions, the formal delineation of technical authority to G–S will have the most immediate, positive returns. Although an excellent start to organization correction, there are other things that I think need to be instituted.

Oversight of the contractor must happen. We're fooling ourselves if we actually believe insight is enough. Greater accountability is needed of how the program decisions were made, and what was the basis for those decisions. Real risk-based decisions with an active and managed database needs to be part of the program's normal assessments of both short- and long-term risk exposures.

Accurate, verifiable, and repeatable metrics need to be developed and utilized. The continuation of the systems integrator should cease. The current contract should be modified or restructured to enable the Coast Guard to work directly with asset manufacturers for construction. Asset support and logistics and supply chain management should be managed by Coast Guard organic resources. Incorporate the existing G–S-Cutter Certification Matrix on all future surface asset procurements. IPT leadership and shares should not be held by the same entities we're trying to govern and manage. It just can't work.

In closing, I greatly appreciate the opportunity this committee has offered me today to testify before you. Concurrent with this

oral testimony, I've provided a very lengthy, and detailed, written testimony for inclusion in the record. It further amplifies many of my oral comments concerning the variety of Deepwater subjects that have brought me here today.

I'm more than happy, and very willing, to answer any and all of your questions to the best of my ability.

[The prepared statement of Captain Jarvis follows:]

PREPARED STATEMENT OF CAPTAIN KEVIN P. JARVIS, U.S. COAST GUARD, RETIRED

Introduction

Good afternoon. Senator Cantwell, as the Chair of this subcommittee, I'd like to thank you and the remainder of the Committee members for holding this important hearing concerning a subject that has consumed a good portion of my life for the last 7 years. I'd also like to start off by thanking Senator Snowe whose name I recognize as both the Ranking Member of this subcommittee but also as a supporter of the Coast Guard and a desired Deepwater acceleration.

I am Kevin Jarvis a recent retiree from the United States Coast Guard, the military organization I have loved for over 29 years of commissioned service. I proudly wear my retirement pin for all to see. Because of my continued unmatched loyalty and love for this magnificent organization and the service it provides the United States, this specific topic (Deepwater) and the unfortunate negative publicity it has cast undeservedly on many of the men and women of Coast Guard, and my unique familiarity with many of the Deepwater tactical and strategic decisions, policies and resultant outcomes, I elected to come and testify today after a long train ride from Florida. In providing this testimony, it is my solitary hope that it can assist you and the Coast Guard to make this very important and critically-needed asset acquisition program more effective, cost efficient and transparent, and most importantly, as the good stewards we're supposed to be, more accountable to the American public.

A short synopsis of my background is as follows: I am a career Coast Guard commissioned officer who has spent a predominance of my service in Naval Engineering and logistic related assignments. From the deck plates and bilges in three different cutters, my selection as the DOT–U.S. Coast Guard 1993 Federal Engineer of the Year, to my final assignment as the Commanding Officer of the Coast Guard's Engineering Logistic Center (ELC), I've seen, and/or done virtually everything a Naval Engineer could do. In addition to my Coast Guard Academy education (BSE in Electrical Engineering), I've been fortunate enough acquire two Master Degrees from the University of Michigan in the areas of Naval Architecture and Marine Engineering, and Mechanical Engineering. Moreover, I acquired a Master of Arts degree in National Security and Strategic Studies from the Naval War College; as a Naval Engineer, attending the Naval War College is a relative rarity. Last, I completed, in concurrence with my last Commanding Officer assignment, a Master of Science degree in Quality Systems Management with an emphasis in Six Sigma from the National Graduate School. It was a result of many of these engineering experiences, educational qualifications, proven leadership attributes and lucky timing that was I introduced as a G–S representative to the Deepwater program.

Prior to any detailed discussion I have on the Deepwater program, let me state that I have read the recent DHS IG report dated January 2007 and agree with their findings and recommendations. Additionally, I've been provided a copy of the Commandant's recent Congressional testimony on this subject and I fully believe Admiral Allen's legitimate emphasis and desire for program transparency, greater accountability and formally shifting technical authority from the contractor or elements of the acquisition directorate to the more rightful owner, the engineers within the CG–4 directorate are excellent steps in the right direction.

The Deepwater Contract Strategy and Its Flaws

The contract strategy was in reality pretty simple and elegant to describe, but due to its uniqueness, getting any type of details beyond the "concept" was virtually impossible to acquire. This System-of-Systems, performance-based contract was to have as its major hallmarks; a "Systems" integrator to ensure all the working parts of the delivered assets worked together; a performance-based contract that, with the exception of the National Security Cutter (NSC) which was relatively detailed in the Systems Performance Specification (SPS) Section 3.8, was all about the final performance of the "built out system"; a heavy reliance on Commercial Off-The-Shelf (COTS) and Commercial and Non-Developmental Items (CANDI); and an assort-

ment of virtually every Contract Line Item (CLIN) billing strategy imaginable. The Contractor's performance would supposedly be monitored and assessed through the System's increased Operational Effectiveness (OpEff), lower Total Ownership Costs (TOC), and Customer Satisfaction. The strategy was indeed unique. Building the contract details, simultaneously moving down a very aggressive Request for Proposal (RFP) timeline concurrent with three separate industry teams desiring contract related guidance, and building the program and directorate support staffs all at the same time would prove to be an almost imaginable task. This constant dance between pre-set time-driven requirements and necessary performance specifics would only get worse as the contract matured.

Moreover, it was readily apparent to many prior to award with the three industry teams and immediately after award to ICGS that the implementation of this simple and elegant strategy would be extremely complex to manage properly and virtually impossible to hold the contractor's feet to many of the performance measures since it was all built on the "end-state" system-of-systems performance; ergo we'd have to really wait until 2020 or so to really see if we ultimately got what we paid for. The contractor could easily state that a missed mark in articulated performance with an early delivery asset would be accounted for in a later version of another asset, or some other part of the still undeveloped part of the system-of-systems planned concept. This became a constant moving target when trying to pin down any given system's performance at any given point in time. Making matters worse was the fact that the Coast Guard couldn't develop an accurate and repeatable OpEff model in time for the various industry teams to insert their System of Systems numbers and justify "real" OpEff increases from their contract proposal. Eventually, with the established RFP solicitation date fast approaching the Coast Guard and industry teams settled on a "Presence Model" that evaluated the industry team's proposal based on asset presence and coverage capabilities of locations and missions only; lost was the assessment of an integrated solution where the sum would exceed the individual parts!

To make matter worse was the accepted realization that any induced Coast Guard changes in mission requirements, workforce management, maintenance needs, funding issues or virtually anything that could impact the "System of Systems" performance, could be the trigger for any of the contractors to ask for, and probably be awarded, a contract modification for either more money, more time, or readjustment of the already difficult to mandate operational effectiveness baseline. Here was another flaw in the contract strategy. To try and hold the contractor accountable for any Coast Guard induced change, adjustments to the OpEff model and measurements against an established and agreed upon baseline would be needed. This was a very transparent problem that was immediately highlighted after the needed Coast Guard mission changes from 9/11.

As mentioned previously, only the NSC had any level of real defined and measurable asset performance requirements. The remainders of the system-of-systems deliverables were virtually non-defined and were left to the individual industry teams to be innovative and propose an integrated solution for a 20+ year performance period. This enabled each industry team to propose an assortment of near-term and out-year ideas with costs estimates which were difficult to defend but even more difficult for the Coast Guard to analyze as rational and reasonable. As a result, cost proposal, TOC numbers and the process for fitting them into the annual cost constraints imposed by the Coast Guard as an acceptable bid was a skill mastered by the winning industry team, yet appeared to be elusive for justification and repeatability.

COTS and CANDI equipments are great catch words and were to be the basis of matching innovation's potential higher costs with already proven, mature designs and equipment with supportable and manageable supply chains. With a reliance on COTS/CANDI, the contract strategy often associated itself with the minimization of Acquisition, Construction and Improvement (AC&I) moneys being funneled toward research and developmental (R&D) concepts. Yet another contract enforcement flaw became apparent as the term "innovativeness" was often inserted by the contractors and accepted by the Deepwater program for what would otherwise be categorized as R&D initiatives. How else could the VUAV which only existed as a scaled model of a potential aircraft option, shipboard radars with never before achieved acquisition and detection capabilities, stern ramp designs on ships the size of the NSC, or the original CASA proposal which was at best, an unproven hybrid of other CASA platforms have survived the award process. Each of the above are representative examples of concepts which have since, crashed when sized up from the model, have been substituted by more conventional designs, or replaced in their entirety.

As for the System's Integrator, this entity was advertised to be the glue that pulled all the individual asset pieces together into a collective product with measur-

able and increased performance returns. Individual assets were to mutually support and/or augment each other. New asset "cradle to grave" logistic supporting requirements, maintenance activities, workforce apportionments, funding streams, and legacy asset sustainment and replacement schedules were all intersecting challenges that were supposed to be more efficiently and effectively managed through the use of the System's Integrator. Much of these advertised Integrator outcomes have failed to materialize.

New asset logistic improvements, both processes and supporting IT systems have been painfully absent. Throughout the shortened life of the first delivered asset, the 123′, logistic support and complete supply chain management for Deepwater introduced equipment was marginal at best. The story doesn't improve much for the other surface assets. Although there is more than enough positive rhetoric from the contractor and the Deepwater program, the fact that NSC 1 is now floating and getting closer to an operational status with many of the needed logistical support details and deliverables still ill defined, is indeed troubling. Although the ICGS position that a particular shipboard system will be supported by a performance-based contract is indeed refreshing and in alignment with many other government support strategies, a failure to produce any concrete examples of either the breadth and depth of these contracts, and more importantly where the gaps will exist between performance-based contract boundaries was the state of affairs when I left the Coast Guard last June; I am unaware if much has changed since. The fact that the Integrator failed to adequately respond to repeated calls for surface asset logistic details, failed to utilize or show any real purpose of the expensive Business Process Assessment and Redesign initiatives, benignly watched as replacement after replacement rotated through the top position of the Contractor's logistic organization begs the question; where is the return on the investment for this high priced Integrator? I submit that this was and still is one of the biggest contract flaws associated the Deepwater program. The Coast Guard relied on significant Integrator involvement, influence and accountability to enable the System of Systems acquisition strategy. The Integrator's seemingly absent influence in key areas expected by the contract and their very real complicity in why we're here today can not be overlooked when its painfully obvious that many of the initial contract strategies, requirements and deliverables which the Integrator was to be a significant enabler have either failed or are failing. Coast Guard management of the program is not without fault for these failures, but neither is what was billed by the elements of G–ADW and subsequently G–D, our "Strategic Partner", the Integrator.

My Entry Into the Program and the G–ADW (G–D) culture

I was already aware of the basic Deepwater contract strategy through a variety of the internal Coast Guard publications prior to my official entry on November 2000 into the Deepwater experience as G–SDW. Unfortunately, I was already aware of what was rumored to be troubling organizational differences between the elements of the G–ADW (predecessor of G–D) organization and many of the Coast Guard Headquarter Directorate personnel. In short order, I would find that these rumors were indeed very valid organizational problems which, in my opinion were critical and fundamental flaws in the execution of the planned acquisition strategy. Traditionally, and in accordance with the *Systems Acquisition Manual* (SAM), any major acquisition relies on the careful blending of the various Coast Guard Directorates' resources into what may be categorized as a purposefully designed set of acquisition checks and balances. In the simplest of terms and using only three of the many acquisition supporting Directorates as an example, the Operational Directorate would assist with the development of the Mission Needs Statement, Operations Requirement Document and other operational related criteria. The Engineering Directorate would assist with the necessary design standards, procedures, sustainment requirements and assessments to ensure that the Acquisition Directorate's intended procurement would fulfill the mission needs established by the Operations Directorate. Although the Acquisition Directorate was ultimately responsible for balancing cost, schedule and performance, the remaining support Directorates were fully aware of, and greatly appreciative of the sometimes uncompromising cost, schedule and performance decisions. The Operations Directorate focused on operational capabilities and performance. The Engineering Directorate would focus primarily on delivery performance and its long-term corresponding elements of logistics and maintenance sustainment. As proven with other recent and successful Coast Guard major acquisitions (WLB/WLM and Great Lakes Icebreaker), this very "healthy" balance and tension was expected to ensure the Coast Guard bought and built something it needed, could operate, and maintain for the expected life of the particular asset. With the Deepwater program, there would be nothing "healthy" about this balance. From the outset, this unhealthy situation, whose gen-

esis lies imbedded in the overall procurement strategy, and the allowance granted to the Deepwater program to deviate from the SAM, would virtually compromise any chance for a successful execution of the Deepwater procurement plan.

In my capacity as the Engineering Logistic Center's Platform Manager (tour length from Summer 1998 to November 2000), I had the opportunity to witness firsthand some of the new acquisition strategy concepts and how they would impact "traditional" acquisition processes. One such instance was during the "review" and "reclassification" of hundreds of G–S previously provided engineering and ship design, construction and evaluation standards and principles. During this review process, I witnessed the elements of G–ADW, question every existing standard for its alignment with the "System of Systems" strategy and its reliance on the contractor to be held only to delivering an asset to a contractually-specified "performance standard". Many existing engineering standards, procedures, criteria and testing requirements were summarily classified as "too prescriptive" which if included in the certification matrix would unduly prevent the individual contract teams to be "innovative". The fact that this process took place at all was not as startling to me as was the context behind the Deepwater Program's perceived motive for its purpose; changing from traditional and proven asset construction procedures and standards to one where greater latitude was given to the contractor to do what was right when it came to designing and building the surface fleet. With full cognizance by the program's leadership, this was Deepwater's first overt act of dismantling and disrupting the proven support directorate's roles and responsibilities associated with a major acquisition. In my opinion, this was yet another critical program mis-step which placated the individual industry teams at the expense of time-tested and proven Coast Guard organic technical resources. This dangerous and repeated tactic of contractor appeasement and dismissing unbiased internal Coast Guard technical assessments and recommendations has culminated with the need for this hearing.

In November 2000, I was reassigned as an off-season transfer, to fill the position as the Chief Systems' Deepwater Integration Office (G–SDW). I was responsible for the integration of all G–S' organizational responsibilities, capabilities and technical input into the Deepwater acquisition. I had a staff of 10 personnel who represented the disciplines of surface, aviation, logistic and C^4ISR. As G–S' Headquarter staff for Deepwater support, we coordinated and integrated the acquisition support program responsibilities and responses to their cognizant parts of the remaining internal and external pieces of the G–S organization. As an example, for the surface element of my staff, this meant Deepwater program coordination with G–SEN, ELC, the CG YARD, and both MLCs. I reported directly to G–S and had frequent, often daily meetings with my Admiral concerning the challenges and opportunities associated with Deepwater. From 2000 to 2002 this was RADM Ronald Silva. From 2002–2003, this was RADM Albert Kinghorn. As their direct representative to the Deepwater program, I attended all Deepwater-related meetings which required 0–6 (Captain) presence and/or decisionmaking, and often represented or accompanied the Admiral at those meetings requiring Flag presence. Both Admirals trusted me implicitly and I had exceptionally wide latitude in not only speaking with G–S authority, but also establishing specific G–S positions on a variety of Deepwater-related subjects.

Within days of reporting to G–SDW, getting briefs from my staff elements and visiting the corresponding players from the other Directorates, including meetings with G–ADW, his deputy and his various APMs (program managers for the various assets), it was immediately apparent that the rumors of organizational problems were very real. Since G–ADW was identified as a "Re-invention Site" it was provided deviation status from the existing Coast Guard acquisition manual and as a result, there were no established organizational Roles and Responsibilities with many of the other Directorates. Moreover, many of the normal acquisition program necessities were being developed and implemented while still in the draft or early developmental stages.

On a timeline, the Coast Guard was still in the pre-award stage. With three competing industry teams, having enough resources to cover all of the program or directorate needs was a constant challenge for all the directorate staffs including G–ADW. It was during this hectic, and very fast paced time that more of the fundamental program aspects and the concept of a "System of Systems" strategy with a program and asset integrator became better defined. It was also during this pre-award period that more organizational friction points were spawned. G–ADW elements started using the phrase "Change Agent" more frequently and the Machiavellian justification of the program's "ends will justify the means" as some of their overarching guiding principles. To G–ADW, their mandate was to inculcate this acquisition philosophy change and its resultant organizational upheavals into the Coast Guard. In simple terms, this meant that for real acquisition change to occur,

anything that mirrored the way something was currently done, or done in the past, could not be a part of the Deepwater acquisition tactical plan. As the G–S senior (with the exception of G–S himself) representative to the program, I immediately sensed that the locked doors of the Deepwater spaces and controlled access afforded the G–ADW staff much more than just procurement security during the contract development and pre-award period. It was a very convenient mechanism of keeping all but "cleared" Coast Guard elements from entering their spaces as G–ADW virtually isolated themselves purposefully from the remainder of the Coast Guard. Although all of the SDW and other Deepwater support directorate staffs were "cleared" and had access to the G–ADW staff, it became readily apparent from my in briefs and difficulty in getting details on many of the G–ADW current "goings-on" that the SDW staff was missing many important contract development and contract process meetings. We were "invited" to only those meetings and strategy sessions when the G–ADW staff thought it was appropriate to do so. To a certain extent, G–ADW had a 2-year jump on me and many of what proved to be flawed execution strategies and tactics were already in place and firmly inculcated in the G–ADW staff elements. My first direct order to my staff was "G–S will no longer be rolled by G–ADW", followed in succession by "Attend every meeting we're invited to, and barge into every one we weren't invited to but should have", and finally, "document everything and act with my authority as SDW". The SDW staff immediately and with great zeal, increased our presence in the locked spaces of G–ADW and although unwanted by G–ADW, began asserting more of our traditional acquisition support roles and responsibilities.

Concurrent with this, we increased liaison, communication and information flows with not only our G–S internal and external Headquarter staffs, but also the other acquisition support directorate staffs. Acknowledging what I call a "mischief gap" that G–ADW had with the SAM deviation approval, I worked to close this opening by establishing a formal set of agreed upon roles and responsibilities between G–S and G–ADW which would stabilize and hopefully mend broken organizational fences. Due to the existing anti-G–S culture within G–ADW and the reluctance of the existing Deepwater program manager to even entertain such an initiative, it took over 8 months of concerted effort with my classmate in the G–ADW organization while waiting for G–ADW to retire. Although only 6 relatively short paragraphs long, this roles and responsibilities agreement was powerful in that it formally established a more defined relationship between G–S and G–D (note that by this time, G–ADW had been reclassified as G–D) elements. In simple terms, G–S was to establish and provide the engineering and logistical expertise and advice to G–D. G–D was to use these G–S provided inputs in the development of the program as it procured new assets and services. This agreement also accounted for any unforeseen or non-existent policies, and instructed both organizations to collaborate together in their development. Signed by both G–S, RADM Silva, and G–D, RADM Stillman, the memo was approved by the Coast Guard's Vice Commandant, VADM Collins on 27 July 2001. Although accepted and approved by the highest levels of both Directorates, it became quickly apparent that it would be just another piece of Coast Guard policy that G–D elements would decide not to honor. If there was ever doubt before hand, it was now crystal clear that the bedrock placed by G–ADW was being cemented in place by G–D; the G–S engineering and logistics expertise were not a priority. Through the contract, the Deepwater program was expected to be supported by a "World Class" ship builder and their cognizant engineering design staffs. Any interim G–D program engineering expertise could be purchased through a multitude of readily available engineering support contractors. Concurrent with this intended and carefully crafted effort to minimize the need for any G–S technical or logistic input was the steady build-up of a duplicative naval engineering technical capability within the G–D staff elements. Initially advertised as nothing more than additional engineering resources to "manage" the surface portions of the contract, these same naval engineering elements, both military and subcontractors, quickly became the mouth pieces of the contractor and virtually squashed any and all engineering design, maintenance and sustainment concerns from the G–S engineers. This "World Class" ship builder reference would be used time and time again by the G–D elements whenever a difference of technical or logistical positions between G–S and G–D occurred. With the "World Class" industry partners giving G–D all the input they needed, the G–S assessments, concerns and recommendations were often given nothing more than lip service and summarily dismissed. As will be discussed shortly, the Integrated Process Team (IPT) environment would be the cooking crucible for many heated discussions which primarily sided with the G–D, and the industry position.

The Integrated Process Teams (IPTs), a Missed Opportunity

A key process management ingredient of the Deepwater strategy was the tactical execution of IPTs. These teams were comprised of representatives of G–D, the program supporting Directorates, and industry personnel. They existed at every aspect and every level of the program from the strategic Flag level, Overarching IPT (OIPT) and 0–6 Integrating IPTs (IIPT), to the more tactical Long Range Interceptor IPT which often consisted of Lieutenants and below. Typically chaired by either ICGS or G–D elements, they were touted as the entities where the majority of problems and issues would be resolved. Enhanced communications, collaboration, consensus and sound program decisions were expected characteristics of each IPT. Although some IPTs were more successful than others, most did not function as planned for a variety of reasons; newness of the concept with poor training, trust issues, communication issues, resource issues, etc. Of all the IPTs, the surface IPTs in specific were the most volatile. It is safe to say that for the most part, the entire category of surface IPTs, (NSC, OPC, FRC, 123, etc.) became cauldrons of discourse, resentment, mistrust, and even more caustic organizational fractures.

The immediate disagreement of established roles and responsibilities (in spite of the signed G–D/G–S memo) was in my opinion the singular cause for these IPT failures. A careful investigation of all surface IPT problems will track back to this critically important disagreement. With the recently signed Flag memo which stipulated G–S and G–D roles and responsibilities, G–SDW thought it now had the backing of the Vice Commandant to ensure our voice, concerns and recommendations were "honestly" evaluated as part of the IPT format. The G–S recommendations not incorporated were expected to at least be explained and documented as part of the IPT's decision process. Rarely did this occur. Since I was leading the G–S charge for incorporating the organizational roles signed by both G–D, G–S and approved by the Vice Commandant, I highlighted the program's overt flaunting of these roles at every opportunity. As one might expect, the IIPT was on more than one occasion a very caustic environment.

Since all G–S surface IPT members worked either directly or indirectly for me, as G–SDW, I ensured that each G–S representative knew their approved role and at every IPT level, I was continually aware of the program's flagrant failure to respect and comply with the Flag agreement. In that regard, they all acted by my direction. The G–S role was a critical program "check, balance, and technical assessment and recommendation" necessity. With my years of engineering experience and variety of assignments, I had sufficient personal knowledge of the qualifications, personal attributes, and technical capabilities of most, if not all of the internal and external G–S and MLC logisticians and engineers who supported the Deepwater program with their thousands of years of proven engineering and logistical expertise. With the Flag memo in hand, I was not about to let this invaluable and irreplaceable organic Coast Guard capability be silently dismissed. In doing so, I ensured that each G–S IPT representative complied with the IPT rules for discussing our inputs, concerns, recommendations and documenting the IPT outcomes. It should be no surprise that the level of documentation on these related issues probably differs significantly between what's retained by G–D and G–S elements. We knew that with each and every dismissed G–S technical and logistic assessment and recommendation, we were traveling down a path that many, even very early in the program saw as an impending "train wreck". The continual discussion within many G–S and MLC staffs was not if the wreck was going to happen, but how extensive it would be when it happened.

Although the continual role disagreement was a significant causal factor in the surface IPTs struggles to become functional entities, it was not the lone culprit. Other progress inhibitors such as the actual IPTs membership, who decided who was to be a member, who the members worked for, how meetings were coordinated, managed, and documented, how problems were resolved, and how the IPTs would make decisions were noteworthy issues which were hallmarks of the early IPT troubles.

IPT mechanics, intended characteristics and processes were described in the Deepwater program's Project Maintenance Plan (PMP). The PMP, would be the tactical execution of G–D's Deepwater contract strategy. To no surprise, many of the PMPs elements immediately became discussion hotspots. G–D wanted all IPT members to report to the IPT chair. Seeing this as a potential tactic to not only functionally, but also organizationally "control" and, or "manage" the IPT direction, this G–D desire was met with significant resistance with hard lines "drawn in the sand" from both G–S and the G–O IIPT representatives; other non-G–D IIPT representatives followed suit. In our view, to ensure that the supporting organization's representatives could confidently and safely, for their careers or employment for those

civilian personnel, provide unbiased input and report back factual developments or concerns, they needed to stay out from under the thumb of the G–D IPT leads.

Early IPT problems also raised the concern over who actually would determine IPT membership representatives. On more than one occasion, the surface IPT lead tried exerting his authority and remove G–S surface IPT representatives as formal members. Ostensibly the reason and justification was the IPT members were disruptive to any positive and necessary IPT decisionmaking. Although, it was not uncommon for the G–S IPT representatives to have strong and vociferous mannerisms in fulfilling their IPT roles, in my opinion, it was the critical discussions and concerns that these G–S IPT members had on any particular engineering or logistic issue that was the real underlying reasoning for their desired removal from the IPT by G–D APMs. I thwarted this effort in both my SDW and later in my ELC Commanding Officer capacity.

Early IPT functionality was compromised by poor IPT management. Meetings were often poorly advertised with sometimes only hours to respond, poorly documented or with the many resource challenges, poorly attended. Established IPT agendas, with intended discussion items and articulated desired outcomes were rare. With the plethora of possible issues, having knowledgeable, capable resources at the meetings was of a paramount importance to everyone. When these technical areas were covered with personal assets sometimes only one deep, it was critical to have the right person with the right talents and skills at the right meeting. Due to poor agenda management, on more than one occasion the G–S IPT member was not the best available choice. In these circumstances, the G–S IPT representative would implement a "reach-back" effort to the more knowledgeable subject matter expert. This "reach back" model was not readily accepted by G–D elements as an acceptable IPT representative strategy and was often ridiculed as not providing decisionmaking "empowered" resources. In spite of this false "empowerment" claim, the "reach back" model worked very well for G–S and enabled a much more effective and efficient use of the limited AC&I funded project resources. Rarely was the absence of a G–S IPT member the cause of not making a decision. To the contrary, it was because of our continued presence that planned IPT lead decisions were thoroughly discussed, evaluated and often questioned for supporting details and justification. Unfortunately, because of the induced time criticality of many program decision steps, the engineering decisions which would normally require and await much greater exploration and analysis, were made in the face of the G–S IPT representative's objection. The advertised IPT desire to achieve collaboration and consensus would quickly deviate to a model of unexplained or poorly justified IPT unilateral decisions by the IPT chair. This pervasive program tactic would come back to haunt the Coast Guard with the time driven pursuit of the 123′ and NSC.

The PMP did identify an agreed upon IPT problem resolution process. It was the expected responsibility of each IPT to make the maximum effort to resolve problems at the lowest level. When the circumstances prevented this, any particular non-consensus voting representative could raise the particular issue to the next higher IPT for discussion and possible resolution. It was expected that the higher level IPT would quickly decide the issue and give task direction to the lower IPT so as not to negatively impede the time criticality of the overall schedule. Due to the sometimes overwhelming number of IPT non-consensus decisions at all levels, this perfect decision resolution scenario rarely was the timely solution it was hoped to be. Moreover, an additional IPT, between the IIPT and the OPIT was inserted after contract award. It was co-chaired by the G–D and ICGS Program Managers and was titled the Program Management Team (PMT). The PMT's membership consisted of senior G–D, ICGS and other contractor personnel. With the exception of the G–O Deepwater 0–6 representative who was allowed to "call-in", there was no non-G–D routine presence at the meeting. It was advertised, that if a G–S-related decision was to be discussed at the PMT, the G–D PM would make every effort to ensure a G–S representative would be notified in a timely manner to be part of the discussion. If for whatever reason our presence wasn't possible, or an "unexpected" G–S related discussion topic just happened to surface at the PMT, the G–D PM felt comfortable he could represent any G–S concerns. The fact that the PMT was between the IIPT and the OMPT, by IPTs rules meant that any IIPT disagreement that would normally be brought up to the OIPT for resolution first needed to go thought the PMT. This became a very convenient joint G–D/ICGS mechanism to resolve program problems that escaped 0–6 solutions but didn't need Flag involvement. With no routine G–S presence we were often trying to reverse PMT "agreed upon" decisions after the fact. Even when I or my deputy was invited for the discussion, we were not voting members. As a result, it was unreasonable to expect our discussion points to convince enough of the 18 G–D or ICGS PMT members to reach a favorable G–S decision. Needless to say, G–S was advised of these IIPT disagreement

areas for eventual Flag to Flag discussions with G–D directly or as part of an OIPT "non-agenda" discussion topic. Sadly, the G–S influence or objection, even at the Flag level rarely carried the day and those that did would not have occurred without the direct support of the G–O Flag.

I suspect with the plethora of non-concensus and troubling IPT decisions, and the relatively slow progression of these concerns through each subsequent IPT level, the contract's time reality somewhat supported the G–D APM's pretext to unilaterally make their best decision and keep the program running forward, a concept I fundamentally agree with. Unfortunately, what became very disturbing was the unusually high frequency at which this unilateral decision oddly turned out to be more aligned with the Deepwater contractor's position than G–S'. As will be discussed later in the events surrounding the 123′ WPB, the G–D position that the initial G–S 123′ WPB technical concerns were unwarranted, was formally transmitted to G–S as follows: the ICGS engineering analysis was "good enough" and the 123′ will move forward as planned. The fact that all eight 123′ WPB's suffered major structural failures, and are non-functional Coast Guard assets is indicative of the dangers implicit with time driven decisions. With the constant reminder from the PEO himself, his deputy and PM for "ruthless execution of the contract", more and more time-based decisions would take priority over the performance concerns raised by G–S. The "Iron Triangle" phrase of cost schedule and performance as coined by the G–D PM, was in more reality less a triangle and more of a rod with the only measurable dimensions of cost and schedule; performance in my opinion was becoming nothing more than a necessary word to be included with the other two. As long as the asset was delivered reasonably close to the planned delivery date, all was essentially well. Whatever performance we acquired with the asset would be computed into the OpEff model and if not sufficient or of the expected level, it would be accounted for by the contractor in later asset improvements or capabilities in the very fluid system-of-systems grand plan. For example, any failure of the NSC to achieve the SPS required speed of 28 knots (which was still very much in question when I departed the service) was not as important as was meeting the scheduled NSC delivery date. So how will the contractor be held accountable?

During these early IPT "storming" evolutions, a new G–D initiated phrase and contract strategy was further defined. With the expected value-add of "World Class" ship builders, and the fact that the contract enabled them to be innovative in delivering "performance", the desired expectation of the supporting directorate IPT members was that they only need to acquire "insight" into the contractor's proposal and planned asset details. The traditional government requirement for contractor "oversight" was not part of the new acquisition strategy and "change agent" concepts. Regardless, "oversight" of the contractor was not to be a G–S concern. Any discussion with G–D elements where the term "oversight" was used by G–S personnel was quickly corrected by senior program elements. Although it might not have been the G–S-specified responsibility for contract "oversight", this more benign G–D "insight" perspective and greater expectation that the contractor would do the right thing in providing us the contracted System of Systems performance was indeed very troubling. In spite of the G–D staff's continual corrections, many in G–S were very concerned with what appeared to be G–D's *laissez faire* "oversight" position.

For the most part, these IPT realities and program disagreements plagued and challenged program progress from years before release of the RFP and well past the award date. Most were still very active when I left SDW in the Spring of 2003 and were still raging even after I retired in 2006. As such, the inability to effectively function at the lowest level of the program significantly hampered virtually every expected and projected contract deliverable. This dysfunctional IPT problem was not news to anyone despite the carefully crafted Quad charts and reporting instruments by the program staff which typically minimized the reality. As I did with my Flag in G–S, I feel confident the other IIPT members kept their Flags advised of the IPT troubles. Although the articulated position from senior G–D personnel was always of support and talked up the need for collaborative IPT decisions, it was also common knowledge that these same G–D senior personnel were losing patience with G–S' continual requests for additional information, analysis or testing. G–S performance warnings conflicted with the advertised performance attributes stipulated by the ICGS elements and trying to resolve them failed to conveniently mesh with the delivery schedule expectations. G–S' "conservatism" was being cast by G–D senior personnel as obstructing timely contract progress. As time progressed, the terms of obstructionists and G–S were becoming linked by not only G–D elements but others as well. Those who knew of the future we foresaw also knew that tagging G–S as an "obstructionists" was completely inappropriate. Again, the 123′ WPB non-performance realities, the G–S-induced necessity to develop an alternative Fast Response Cutter (FRC) design and contract strategy, and the current NSC structural

and performance issues seem to validate that time and money probably could have been better spent.

The 110′ to 123′ Patrol Boat Conversion

Due to the rather significant funding constrains established by G–ADW at the beginning of the program, all three industry teams would be indeed challenged to squeeze new asset replacements and the sustainment of the legacy deepwater fleet into a workable plan. The ICGS proposal devised what I always thought was, if achievable, an elegant concept and solution for the aging 110′ Patrol Boat class. With the 110′ hull deterioration issues articulated to all of the industry teams well in advance of the RFP issuance, each team had the opportunity to incorporate this "known 110′ WPB hull condition" into their plans or contract bids. ICGS's pre-award plan always included a "stretched" 110′, and the hull condition was accounted for with a "bided" amount of expected hull replacement. Collectively their proposal would lengthen the 110 feet to 123 feet with a stern extension and make other hull replacement efforts as needed so the life of the new 123′ WPB would coincide with the FRC introduction where more funding flexibility seemed to exist. Although an elegant concept solution, the G–S engineers almost immediately started raising concerns of both the stern launch design and the overall engineering and model testing analysis of the entire platform, which included the Short Range Prosecutor (SRP). While in the pre-award phase, Coast Guard Technical Assistance Teams (TAT) were severely limited in the level of actual "engineering evaluations" and ability to transmit detected problems to any of the industry teams. All communication transmittals were really limited to asking how their proposal would address a particular problem. The level of communication and interchange was expected to change drastically after award in the IPT environment with collaboration and consensus the way of doing business.

With the 123′ WPB designated as the first delivered ICGS Deepwater asset, it was the first to get real intense G–S engineering and logistic reviews concerning the corresponding details unavailable during the pre-award period. Unfortunately, even in this new, less constrained contract environment, the engineering details surrounding the planned extension were less than desired by G–S engineers. During IPT meetings, at all levels, a consistent message was coming from the G–S representatives; we were concerned about the stern ramp, how the SRP and 123′ would act as a unit in the same sea-way, and the overall structural integrity of the 110′ hull girder. Repeated requests were made for the timely delivery of the contract required CDRLs which hopefully would include some of the needed engineering analysis to answer these questions. Concurrent with these requests were the arrival of scheduled contract "review gates" that supposedly were to be successfully negotiated prior to progressing forward with the release of a Delivery Task Order (DTO) authorizing additional ICGS work.

These gates consisted of a Preliminary Design Review (PDR), a Contract Design Review (CDR), and a Production Readiness Review (PRR), all of which needed to be successfully completed prior to awarding the DTO to initiate the 1st 110′ conversion. Documentation exists that clearly indicates G–S' engineering concerns with the lack of received CDRLs and the corresponding engineering analysis to enable a successful pass though each and every one of these contract gates. In spite of these documented concerns, the G–D surface APM concluded, from non-unanimous IPT inputs (G–S and G–O objected), that the contractor had successfully completed first the PDR in October 2002, then the CDR in December 2002 and finally the PRR in January 2003. As a schedule-driven decision, this *very* quick completion of three major contract gates enabled the timely arrival of the CGC MATAGORDA in February 2003 and the start of what would be an ill-fated hull extension. It was during the accelerated contract completion of these gates where the ICGS provided engineering analysis for the 110′ conversion was deemed as "good enough" by the G–D surface APM. With the impending APM unilateral decision, I ensured the IIPT was advised and warned that the 110′ PDR, CDR and PRR were to be inappropriately declared successful. Even with the strongest objections at each and every contract review step, my voice and my IIPT vote was clearly insufficient as the G–D PM concurred with his APM's decision each and every time. Even when any chance of winning the IIPT seemed lost, a last plea for caution was proposed by G–SDW; build only one 123′ WPB as a full scale prototype and test the hull structure and the SRP interface with the stern ramp. If the design appeared sound after a prescribed test and evaluation period, the subsequent DTO's could be released to restart the 110′ modification line. This was also dismissed due to overriding schedule and cost priorities. With all options seemingly lost, in December 2002, G–S sent a memo to G–D indicating that because of our overall engineering concerns with the 123′ WPB, no additional G–S controlled maintenance moneys would be directed to

MATAGORDA after the cutter's departure. This memo, along with virtually every other engineering concern G–S could muster failed to slow down the schedule driven 123′ WPB conversion process.

Very similar G–S concerns with the ICGS 123′ WPB logistic support plan were running concurrent with the above cutter extension part of the project. Observing what appeared to be a significant logistic capability gap in ICGS' proposal, G–S offered a "bridging logistic strategy" which would enable adequate logistic supply support until the ICGS logistic concept was ready for deployment. As with the engineering memo, this one was also disregarded by G–D acting under the advice of the ICGS logistic support staff. The conversion results, the current non-operational use of the 123′ WPBs and the wholly inadequate 123′ WPB logistic support system experienced during their shortened life speak loudly of how the influence of the Deepwater contractor on the G–D APM's performance related decision points negatively influenced the final delivered performance of these assets.

The National Security Cutter (NSC) Design Issues

With the unilateral G–D surface APM decisions still fresh from the 123′ project, in early 2003 many in G–S were openly referring to the NSC as a contract repeat of the 123′. That said, NSC designs issues followed a very similar path to that of the 110′/123′ WPB extension project in that even before the RFP was issued and the contract awarded to ICGS, G–S IPT elements had a relatively long and critical list of NSC design concerns. In addition to the current and outstanding structural issues, G–S had concerns with the stern ramp interface and the fact that the original NSC design had no other small boat launch and retrieval system. So significant was this concern that G–S conducted a worldwide survey of existing stern ramp configurations and only after very conclusive findings did the first NSC design get modified for the inclusion of a side launch capability for the Long Range Interceptor (LRI); its unsure if this side launch capability will be incorporated on subsequent NSC designs.

Although this particular design issue was a success, the structural issues raged with the NSC IPT members virtually at a standstill for any progress. With no risk mitigation strategy apparent and no perceived hope of resolution at the NSC IPT level, in accordance with the PMP, this concern was raised to the 0–5 level System Engineering IPT (SEIT) in the early Fall of 2002. As with the NSC IPT, no apparent progress was forthcoming with the SEIT and in the same 2002 timeframe, it was brought officially to the attention to the IIPT. Note however that all during this tumultuous duration at the lower IPTs, it was a brewing storm that the IIPT was watching and knew was coming. Likewise with the 123′ process, NSC DTOs were scheduled for release to ensure the advertised delivery of NSC 1. Concurrent with a planned IIPT discussion of the NSC structural issues, a meeting was held with G–S, G–O, the PEO, many of the G–D senior staff and even some ICGS senior members were present when elements of the ELC staff who supported the NSC IPT, formally presented in great detail the basis for their engineering concerns and forecast of future performance problems. Unfortunately this meeting failed to gain the desired outcome as even in the presence of three Flag officers, the level of distrust and friction that existed between the ELC, G–D and ICGS personnel related to the NSC, compromised any cogent and structured discussion. Subsequent discussions at the IIPT and OIPT also failed to get any resolution, and in spite of G–SDW objections, the DTO to initiate the NSC construction and procurement of NSC Long Lead Time material was awarded. From this period, a variety of correspondence moved back and forth through the G–S and G–D organizations concerning the NSC structural issues. At one point, the NSC ICGS representative developed singular one page rebuttals on how each of the structural issues had been resolved to the point they could be mitigated and removed from the G–D-maintained and controlled risk database. In spite of repeated G–D attempts to de-emphasize the seriousness of these concerns, they were never mitigated successfully and still exist today.

My transfer from G–SDW to Commanding Officer at the ELC in May 2003 and the arrival of a new SDW and G–S later that summer brought a new strategy in dealing with these apparent irresolvable issues. For all subsequent ELC or G–SDW engineering concerns, an independent analysis and confirmation would be needed. Current documentation and separate DHS IG findings have since provided the results of the many independent studies and validations of the G–S initial concerns. During the time, these independent studies occurred, precious and irretrievable time elapsed, DTOs were awarded and the NSC moved along its advertised schedule. One of the strongest warnings I provided to the IIPT prior to leaving the G–SDW assignment was that with the continued construction process of the NSC, and many of the structural concerns dealing with the hull girder itself, if upon NSC delivery we finally get some resolution to these structural problems, it will be too late for the

Coast Guard to economically fix the problems. Unfortunately, this is exactly where we are today. Since all these design issues started before any DTO was released, the Coast Guard missed the best time to make the needed design changes to the NSC. In lieu of making the necessary changes while the NSC was still in the "electron mode" and absorb what would have been at best a relatively minor cost increase and possible schedule slippage, we wasted over 4 years of "opportunity" passing memos back and forth avoiding what was addressed very early on as a critical design flaw. Another example where the Integrator, the actual NSC construction contractor and the G–D staff seemed to align too quickly and conveniently to ensure the schedule was maintained at the expense of performance.

The Fast Response Cutter (FRC)

The FRC became yet another performance problem but not because of any initial concept design in the proposal. Unlike the 123′ and the NSC, this design failure came about after it was decided at the very highest levels of the Coast Guard that the hull was to be of a composite material construction. Almost immediately red flags rose from G–S elements due to the lack of existing hulls of this size with all composite hulls. Most of the subsequent IPT engagements and exchanges concerning the FRC occurred while I was the ELC Commanding Officer. The Deepwater organization I had at the ELC was led by a very seasoned GS–15 who coordinated with another GS–15 whose staff of civilian naval architects and engineers completed the engineering analysis of the proposed composite platform. As a result, I only engaged when the FRC details needed Commanding Officer correspondence signature or influence. What I can testify to is that the analysis indicated serious and dramatic deviations from any parametric references to similar hull forms. In addition to the pure naval architecture red flags, there were sustainment and maintenance concerns for a composite hull. With the uniqueness of the hull material fabrication techniques, and the apparent absence of any known large or small shipyard, with the exception of the Gulf Coast, to do eventual hull repairs in areas where the FRC would normally operate, major maintenance or repair costs needed to be incorporated in the overall evaluation and eventually mitigated. Since the decision to pursue a completely different FRC procurement strategy occurred after I left the Coast Guard, I can't talk with any authority on what really brought about this decision. That said, I have to believe the repeated and final realization of previous G–S engineering concerns with the 123′ and NSC may have finally tipped the balance that maybe it should be the G–S engineers and not the "World Class" shipbuilders that should have the majority vote when it comes to making engineering design decisions.

Funding and Personnel Resource Issues

Any Deepwater related discussion can't be made without accounting for the funding and personnel resource constraints. Although both were significant, I still firmly believe that the overall goal of this contract; a complete integration of new surface and air assets with interoperable C^4ISR capabilities and an integrated logistic support system spanning the entire spectrum of supply chain management, was possible without the need for a system integrator nor the extravagant and complex Deepwater procurement strategy. It should be no surprise that I believe compliance with the SAM and its established "healthy" directorate tensions could have worked!

Funding

Concurrent with the award decision, it was already a known problem that funding, both AC&I and non-AC&I accounts, would be in severe jeopardy. The Operational and Support (O&S) CLINS would place great strains on the remainder of the Coast Guard's operational budget. G–S elements quickly instituted the practice to "fence off" annual funding supporting Deepwater assets from non-Deepwater assets. Based on significant annual increases in O&S costs, the amount of money shunted to ICGS to support the new Deepwater assets could easily and relatively quickly require augmentation from the non-Deepwater fleet.

Projected AC&I program funds needed to reasonably manage the project were knowingly deficient even before the release of the RFP. Personal conversations I initiated with the most senior contract and management levels of the G–D organization before the release of the RFP identified no accounting for *any* cost growth, needed contract changes or award fees. When the G–S 10–20 percent repair maintenance cost metrics for growth and changes were used as examples during our discussions, it became quickly apparent to these G–D officials that there was insufficient reserve in the AC&I program's budget to account for this inescapable reality; there will be contract changes and there will be unexpected growth. A too simplistic answer of, we'll live within the budget and fund what we can fund, was linked to, this is a performance contract, and if the contractor doesn't deliver the specified per-

formance, changes will be their cost to bear, or words to that effect. When the three industry teams were building proposals to utilize every spare AC&I dollar allowed, this over simplification of a very real funding problem crippled many of the needed asset modifications and resource needs early in the program. When comparing this reality funding, to the millions of dollars provided to the Integrator, one can't help but raise obvious questions if the limited AC&I funds are being expended most effectively.

Personnel Resources

Personnel resources across all Directorates would be severely strained. For some reason the early G–ADW and subsequent G–D personnel resource metrics always referred to other acquisition programs and government organizations for a comparison of funds to bodies. This incorrect metric reference drove virtually all related resource decisions and distributions. At one point, the G–D mandate was that there would be no AC&I Full Time Equivalent (FTE) growth in FY04. As a result of these types of management and funding induced decisions, personnel shortages were felt across the board! It was hoped that the Integrator and the strength of the Contractor's resources would help mitigate this resource capability gap. As the program was to quickly find out, this did not materialize and as greater program management "oversight" was needed, there were simply not enough resources to cover the needs. During the initial program buildup, G–S developed a resource presentation that indicated an additional 200 FTE would be needed in G–S alone to provide the expected support directorate roles for the initial "transition" years of the program. This became known as the "Pig in the Snake" presentation because of the analogy of a relatively large mass being accepted and eventually run through the organization. Once the transition period was negotiated, it was expected that the final organization would be smaller because of the ICGS- provided engineering, logistic and management support capabilities and efficiencies. This has yet to and will probably never materialize.

Recommendations

Other than what I've read on the Internet, newspapers or *Navy Times,* I've had extremely limited knowledge of what has happened with the Deepwater program since I left the service last spring. I'd like to use this fact as a qualifier that some of my following improvement recommendations for your consideration might already be taking place or may be unnecessary because of other Coast Guard organizational decisions which I have no knowledge.

As indicated in the beginning of my statement, I have read the DHS IG report and Admiral Allen's testimony on this subject and I whole heartily agree with the IGs findings and the Admiral's initial corrective steps to solving the multitude of Deepwater problems. Of the Admiral's actions, the formal delineation of technical authority to G–S will have the most immediate positive returns. Had this organizational responsibility been respected and accepted by the G–ADW or the subsequent G–D organizations, there's a strong possibility we would not have required either this hearing or expended the countless tax dollars on numerous program examinations by a variety of auditing entities.

Although an excellent start to organizational correction, there are others that I think need to be instituted, In no particular order of importance:

Oversight of the contractor must happen. We're fooling ourselves if we actually believe "insight" is enough and the contractor will self-monitor, and self-certify their work and deliverables. This is a multi-billion dollar contract and we owe it to the American public to ensure that every dollar is accounted for and spent wisely. This is painfully absent with the existing structure. Until Congress is satisfied with the program's corrective progress, routine and periodic assessments need to be instituted.

Greater accountability is needed for how the program decisions are made and what was the basis for the decisions. Real cost benefit analyses and trade studies must be the order of the day. Fabricated analysis, or after the fact studies which support a predisposed initiative must be eradicated.

Real risk-based decisions with an active and managed database need to part of the programs normal assessment of both short- and long-term risk exposures. Mitigation or removal of risks from the database should require the independent verification by the Coast Guard's technical authority.

Accurate, verifiable and repeatable metrics need to be developed and utilized.

The continuation of the System Integrator should cease. I failed to see the justifiable return of the investment for these supposedly critical services. Through

careful and integrated planning with the current Coast Guard organic staffs, this integrator capability is well within the Coast Guard's proven skill sets.

The current contract should be modified or restructured to enable the Coast Guard to work directly with the asset manufactures for construction.

Asset supported logistics and supply chain management should be managed by Coast Guard organic elements as one singular system for all Deepwater and non-Deepwater assets. To date the money directed to the ICGS advertised logistic system has failed to produce any noticeable return on the sizable dollar and personal resource investment.

Incorporate the exiting G–S cutter certification matrix in all future surface asset procurements.

The IPT structure can work, but it takes a legitimate commitment and hard work by all parties for the opportunity to really collaborate. IPT leadership and chairs should not be held by the same entities we're trying to govern and manage. It just can't work. If IPTs are retained, and I think they should, our contractors, whoever they are need to be part of the IPT environment.

In closing, I greatly appreciate the opportunity this Committee has offered me today to testify before you. Concurrent with this oral testimony, I've provided a very lengthy and detailed written testimony for inclusion in the record. It further amplifies many of my oral comments concerning the variety of Deepwater subjects that have brought me here.

I'm more than happy and very willing to answer any and all of your questions to the best of my ability.

Senator CANTWELL. Thank you, Captain Jarvis.

Mr. Teel?

STATEMENT OF PHILIP A. TEEL, PRESIDENT, NORTHROP GRUMMAN SHIP SYSTEMS

Mr. TEEL. Good afternoon, Chairperson Cantwell, Ranking Member Snowe, and the distinguished members of the Committee Subcommittee, and thank you for the opportunity to appear before you to discuss Deepwater.

I'm the Vice Chairman of the Board of Directors of ICGS, and the President of Northrop Grumman Ship Systems. As I think you may know, Northrop Grumman Ship Systems has nearly 70 years of experience designing, constructing, and maintaining ships of all types. In that time, Northrop Grumman Ship Systems Gulf Coast operations has produced a total of 534 ships, and has built 24 percent of the Navy's current operational fleet.

In just the last 30 years, we've completed 15 new vessel designs for a diverse group of military and commercial seagoing ships.

On behalf of Northrop Grumman, and all of the men and women working in support of this program, I would also like to thank the Subcommittee for their strong support of the Coast Guard, and the Deepwater Program.

The Program has been subject to much criticism, recently. My written testimony and my summary of remarks are intended to provide you with up-to-date information regarding the 123′ patrol boat, Fast Response Cutter, and the design and service life of the National Security Cutter.

First, let me address the patrol boats. The 110-foot patrol boats have seen extensive duty since their entry in the service some 20 years ago. The 123′ conversion was intended as an interim measure, to extend the life and enhance the capabilities of an aging patrol fleet, until new vessels were available to replace it. The conversion work was performed under subcontract to Northrop Grumman by Bollinger shipyards, the original builder of the 110s.

The conversion project underwent an extensive design and review process with contractor and Coast Guard personnel. The due diligence was done.

Six months after delivery, on the first converted vessel—the MATAGORDA—the crew discovered buckling in her hull and on her deck. This discovery occurred immediately following a high-speed transit in rough seas to avoid Hurricane Ivan. The Coast Guard and Northrop Grumman analyzed the situation, and concluded that a workmanship condition arising from the original 110′ construction—not the conversion—was the primary cause of the buckling, and repairs were made.

In March 2005, 6 months later, another converted 123′ experienced hull deformation. This deformation was different from the first. Like the first, previous and subsequent analysis had not predicted it. At this time, six converted vessels had been delivered, and two were in the process. The Coast Guard and the contractors each performed additional, more detailed structural analyses. Despite extensive efforts, these analyses have not replicated the experiences.

Additional problems have arisen, and the Coast Guard removed these ships from service. We're working with the Coast Guard to re-review all data and analysis to isolate the cause, or causes, of the problems. Once isolated, and design solutions defined, the path forward will be laid out with the Coast Guard.

At the outset, I mentioned the 110s and 123s would eventually be replaced by the FRC, or Fast Response Cutter. In 2005, because of the problems with the 123′, the Coast Guard accelerated the design, and construction, of this cutter by 10 years. A worldwide market survey of existing patrol craft determined that no existing craft would fulfill all FRC requirements.

To address the full set of requirements, Northrop Grumman proposed a new design. The design included a composite hull form, with the potential to save a billion dollars over the life of the vessel. The design was unique for patrol boats. This is driven by the need to stay within the Coast Guard's funding limits, yet satisfy a never-before-seen requirements-demand on a patrol boat.

Contrary to some accounts, the FRC did not fail model testing. A preliminary test was conducted improperly. When conducted properly, the FRC passed the test. Moreover, an independent analysis confirmed that the FRC design will meet performance requirements.

To meet the shortfall in patrol boat hours, the Coast Guard has pursued selecting an existing, proven patrol boat that—with limited modifications—can meet its highest requirement priorities. This is an interim measure, as this craft will not satisfy all requirements originally established for the FRC. Thus, the need for a dual path—FRC–B and FRC–A.

Now, let me turn to the National Security Cutter. The NSC 1 is a state-of-the-art, frigate-sized Naval ship, the first of this 8 of class. The BERTHOLF was launched in September of 2006, and will be delivered in Fall of 2007. The second is under construction.

With regard to public allegations of inadequate ship structure, the NSC 1 is designed to achieve a 30-year service life. The NSC was designed using the same structural design standards as suc-

cessfully used on Navy and Coast Guard vessels since World War II. Northrop Grumman has full confidence in the ability of the NSC to perform all of its intended missions. The issue under discussion with the Coast Guard deals with long-term fatigue-life, related to various assumptions about operating conditions. It is not about whether the NSC, as designed, will be able to safely and effectively perform its mission over the range of operational environments. When predicting fatigue-life, even the best engineers may reach different conclusions. This is driven by the use of different assumptions about operating conditions. Coast Guard and Northrop Grumman technical experts are engaged in a meaningful dialogue which will lead to final agreement on fatigue structure.

Thank you for the opportunity to present today, and I look forward to your questions.

[The prepared statement of Mr. Teel follows:]

PREPARED STATEMENT OF PHILIP A. TEEL, PRESIDENT, NORTHROP GRUMMAN SHIP SYSTEMS (NGSS)

Good afternoon Chairperson Cantwell, Ranking Member Snowe, and distinguished members of the Subcommittee.

Thank you for the opportunity to appear before you today to discuss the Deepwater Program. As you know, within the Integrated Coast Guard Systems (ICGS) structure, a joint venture established by Northrop Grumman and Lockheed Martin, Northrop Grumman Ship Systems (NGSS) is responsible for design, construction and support of all three classes of cutters; the National Security Cutter (NSC), the Offshore Patrol Cutter (OPC), the Fast Response Cutter (FRC), as well as the 110′ to 123′ converted Island Class Patrol Boats. References in this statement to ICGS or separately to Northrop Grumman or NGSS should be construed to mean the role of Northrop Grumman Ship Systems as part of ICGS.

Northrop Grumman has nearly 70 years of experience designing, constructing and maintaining ships of all types. In that time, NGSS's Gulf Coast operations has produced a total of 534 ships—351 ships at Ingalls and 183 at Avondale—and has built 24 percent of the Navy's current fleet of 276 vessels. In just the last 30 years, we have completed 15 new designs representing a diverse group of military and commercial seagoing ships: LSD 49; CG47, DDG993, LHD1, LHD8, LSD41, LMSR, USCGC HEALY (Polar Icebreaker), 2 Classes of T–AO (KAISER & CIMARRON), Polar, NSC, LPD17, Saar5, and DDG1000.

On behalf of Northrop Grumman and all of the men and women working in support of this program, I would like to thank this Subcommittee for your strong support of the Coast Guard, and of the Deepwater Program. We look forward to working closely with you and the Coast Guard to ensure the success of this important modernization. The following statement contains information that I, on behalf of Northrop Grumman, am submitting based on my current knowledge, information and belief.

Overall Deepwater Program Management: On June 25, 2002, the Deepwater Program prime contract was awarded to ICGS. As program requirements have changed since 9/11, the Deepwater prime contract has been amended accordingly to accommodate the new requirements in support of national security.

There has been an extraordinary level of transparency in program management and execution between ICGS and the Coast Guard. The Coast Guard has been involved in every aspect of the Program throughout its history. Each Deepwater asset undergoes design reviews by government and contractor technical experts at key points in the design life cycle, with questions and issues adjudicated as part of the review process. Personnel from the Coast Guard, Northrop Grumman, Lockheed Martin, various subcontractors and ICGS are co-located at production sites around the country as well as in the Systems Integration Program Office in Arlington, Virginia. Full participation by the Coast Guard is built into every level and function within the ICGS team. With respect to programmatic decisionmaking, all major acquisition decisions are made by the Coast Guard, after review and approval by Coast Guard senior leadership through a series of cross-functional government teams. These include reviews by subject matter experts from Engineering and Logistics, Electronics & Communications, Human Resources, Intelligence, and the Programs & Budget Directorate at the staff and flag level. Northrop Grumman and

ICGS do not make decisions in relation to what cutters and boats to buy—we make recommendations. The U.S. Coast Guard is the decisionmaking and contracting authority, and has retained the traditional contract management functions, including the right to issue unilateral change orders, to stop or terminate work, to order or not order assets and supplies, and to accept or reject the work.

There is a lot of interest about the way forward for Deepwater. Leaders within the highest levels of the Coast Guard, Northrop Grumman and Lockheed Martin are committed and focused on the most important issues related to the 25-year, $24 billion acquisition program, including recent Coast Guard initiatives to strengthen program management and oversight—such as technical authority designation, use of independent (third-party) assessments, and consolidation of Coast Guard acquisition activities under one directorate. Objectives to achieve the way forward include: (1) Capitalize on proven, first-article Deepwater successes; (2) Sustain momentum in recapitalizing the Coast Guard through the Deepwater program; and (3) Resolve outstanding challenges associated with some projects within Deepwater. The senior leadership in each of our organizations is committed to meet regularly to review the progress of the program and provide executive level oversight at all times, with specific direction when warranted.

Competition is also an important component of the Deepwater team's effort to deliver "best value" to the Coast Guard. The tenet of competition within the ICGS Deepwater program plan is an open business model that invites participation and competition through the life of the program. Both contractors have a Contractor Purchasing System that is patterned after the Federal Acquisition Regulations. All Northrop Grumman purchases over $25K are individually reviewed for compliance with purchasing guidelines, and the purchasing system is audited (usually every 3 years) by the Defense Contract Audit Agency (DCAA). A government-sponsored third-party review of Deepwater acquisition practices found our statistics favorable compared to large U.S. Navy procurement programs. In addition, competition for subcontract awards is encouraged via the annual Industry and Innovation Days where suppliers and vendors have an opportunity to provide input on new or improved products. ICGS to date has placed orders with more than 600 suppliers representing more than 41 states and maintains an active database of over 3,000 potential suppliers from which it draws to host annual supplier innovation and industry days.

Patrol Boats are small naval ships, generally designed for coastal defense duties, operated by a nation's navy, coast guard or police force in marine—"blue water"—and littoral and river—"brown water"—environments. They are commonly found in various border protection roles, including anti-smuggling, anti-piracy, fisheries patrols, immigration law enforcement and rescue operations. Patrol boats usually carry a single artillery gun as main armament with a variety of lighter secondary armament such as machine guns, and are diesel-powered, with speeds generally in the 25–30 knot range. The above definition aptly describes the 49 "Island Class" 110-foot patrol boats and the 123-foot conversions under the original Deepwater proposal.

The Coast Guard's current 110-foot patrol boats were built in the 1980s and early 1990s by Bollinger Shipyards, Inc. These boats have seen extensive duty in support of the Coast Guard mission to save lives, interdict aliens and seize drugs. ICGS and its teammate, Halter Bollinger Joint Venture (HBJV), proposed to convert the 110-foot boats to 123-foot boats as an interim measure to improve the capability and extend the life of this vessel until its FRC replacement entered operation in 2018. ICGS proposed the conversion concept as the best means to provide the Coast Guard with the necessary capability to continue to meet its mission objectives while remaining within the confines of program funding requirements. Deepwater competitors were required to propose a "system of systems" solution that did not exceed the funding limitation of $500 million per year. With new assets such as the National Security Cutter (NSC), Maritime Patrol Aircraft (MPA) and the Vertical Unmanned Air Vehicle (VUAV) being developed early in the program, it was not possible to design, develop and construct new patrol boats at program inception while keeping within annual funding limitations.

Bollinger had designed and built the original 110-foot boats and was very familiar with their construction. Bollinger was awarded a contract for 16 110′ Island class boats in August 1984 and another contract for 33 more boats in 1986. The design of the 110′ Island class was approximately 20 years old and was based on an existing patrol boat developed by a British firm, Vosper Thornycroft (U.K.) Ltd. The 110′ Island Class boats were commissioned between November 1985 and 1992. Notably, after the first boats came into service, it was discovered that the 110s suffered from hull problems when operated in heavy seas. As a correctional measure, heavier bow

plating was added to hulls 17 through 49 during construction and additional stiffeners were retrofitted to earlier hulls.

Under the proposed Deepwater conversion plan, HBJV added a 13-foot extension to the 110′, which accommodated a stern ramp for the launch and recovery of a small boat, used primarily to support boarding and rescue operations. In addition, the conversion installed an improved pilot house, enhanced Command, Control, Communications, Computers and Intelligence, Surveillance and Reconnaissance (C^4ISR) capabilities and tested, identified and renewed hull plating in areas where an ultrasonic thickness inspection indicated that the existing plating was deteriorated.

At the time the proposal was submitted, some general knowledge about the condition of the 110s was available, and ICGS believed that replacement of the hull plating would adequately address and offset their deteriorated condition. This is consistent with the findings of the Coast Guard's 110′ WPB Service Life Extension Board, published in March 2002, which recommended a program of systematic hull repairs, predominantly in documented problem areas, to address the hull deterioration problems that were impacting 110′ WPB operational availability.

After being awarded the patrol boat conversion work, ICGS engaged in a rigorous design process that included extensive reviews with all stakeholders. These programmatic reviews included a Preliminary Design Review, a Critical Design Review and a Production Readiness Review all of which were conducted with the Coast Guard before the actual conversion work began. Leading up to each of these reviews, the evolving design, design drawings and calculations were formally presented to the Coast Guard subject matter experts in increasing detail for their review, comment and approval. During this series of reviews I am not aware that structural, buckling or deformation concerns were raised as an issue. In addition, during the conversion of the MATAGORDA, the American Bureau of Shipping (ABS) examined the design of the hull extension and new deckhouse and monitored key elements of the work being performed. At the conclusion of the MATAGORDA work, they issued a letter of approval for the conversion work and expressed no reservations with the feasibility of the conversion.

The Performance Specification requirement calls for the 123′ to be capable of unrestricted operation up through sea state 3, or seas averaging less than four feet. Operation restrictions are imposed beginning at sea state four, or seas less than eight feet, where the boats are to be able to sustain limited operations, altering course or reducing speed as required to maintain a ride which does not damage the boat or its machinery or overly fatigue the crew. The 123′ is to be able to survive sea state 5, or seas averaging between eight and 13 feet, maneuvering as necessary to minimize damage or injury to the crew, and then be capable of returning to port under its own power once the seas have subsided.

In September of 2004, after all 8 hulls had entered the conversion program and the first 4 hulls had been delivered, the MATAGORDA was forced to conduct a high speed transit to avoid Hurricane Ivan. This operational necessity forced the Coast Guard to transit in a sea state and speed where the cutter was operating near or above the design limits of the 123′ conversion. Upon arrival at their destination, the crew discovered buckling of the side shell and main deck on the starboard side near midships. An engineering tiger team was formed consisting of Coast Guard and NGSS personnel. This team was dispatched to investigate the problem where it was discovered that the MATAGORDA had an inherent workmanship issue in the baseline 110′ that existed prior to the conversion and contributed to the hull buckling. Specifically, a hidden, unwelded aluminum deck stringer was discovered immediately beneath the area where the failure occurred. Other boats were examined, and this unwelded stringer was also found on one additional hull undergoing conversion. When modeled using finite element analysis, the stresses in the panels which failed on MATAGORDA were significantly higher than the stresses shown when the model was run with this stringer intact. Based on this finding, the team believed this to be the primary cause of the buckling on MATAGORDA, and repairs were made accordingly.

In addition, a reconstruction of the engineering analysis of the 123′ structure was conducted. Based on this, it was also discovered that an early calculation overstated the strength margin for the boat. A revised calculation using a common, agreed-to set of assumptions by the engineering team showed the 123′ would still meet the required operations defined in the Performance Specification.

In an effort to further improve the structural integrity on the 123′, three stiffener bands were installed; one at the upper edge of the side shell, one below this one and another on the edge of the main deck to increase the overall structural strength. While the finite element analysis and conventional calculations both agreed that the original hull, with the stringer under the deck intact, should be suf-

ficient throughout the operating range of the 123′, these additional stiffeners were considered to provide an added margin of strength.

In November 2004, ICGS received a contract modification that changed the arrival schedule of hulls 9–12 to TBD. Long-lead time material for four additional hulls had already been authorized and work continued on the 3 remaining hulls in process.

By March 2005, 6 of the 123s had received the structural upgrade and had been delivered. Certain operational restrictions imposed on these boats by the Coast Guard following repairs to the MATAGORDA had been lifted. Then, during a transit from Key West to Savannah, GA, the NUNIVAK experienced hull deformation in an area aft of the new reinforcing straps. This deformation occurred in a different area from that of the MATAGORDA. Further, this was not an area which had indicated potential for high stresses under any conditions modeled in the earlier finite element analysis.

An outside engineering firm, Designers and Planners, was contracted by the Coast Guard to perform a more detailed finite element analysis of the 123′ hull, which showed that the overall hull structure design was adequate under all expected operating conditions up to the worst operating condition modeled. The analyses were not able to replicate the deformation seen on NUNIVAK. A more detailed look at specific regions on the hull showed an area with high potential for localized buckling in a section of the side shell where the original 110′ hull had been constructed of exceptionally thin four-pound plate. Despite this finding, no actual failures had ever been experienced in this area on 110′ or 123′ WPBs. As a precaution, this thin plate was replaced with heavier plating on those cutters undergoing the Post Delivery Maintenance Availability, with plans to eventually upgrade all the boats. Last, a metallurgical analysis of the deck material determined that the particular grade of aluminum used on the 110s is prone to corrosion and cracking in elevated heat and marine conditions.

In July 2005, then Coast Guard Commandant Admiral Collins' written testimony before Congress outlined the two-fold reason for stopping the conversion process as follows: "As the first eight 110′ to 123′ conversions were conducted, the Coast Guard found that the 110′ WPB hulls were in much worse condition than anticipated. This extended the conversion timeline and would have increased projected costs for conversions after the first eight (the first eight were negotiated under a firm-fixed-price contract). An operational analysis of the 123′ WPBs also identified high risks in meeting mission needs, particularly in the post-9/11 environment."

To date the problems associated with the 123′ conversion include buckling or hull deformation and shaft and propeller alignment problems. In addition to the actions previously described, additional and substantial work has been (and continues to be) done. In addition to the repairs and reviews of structural calculations, we have continued the review process by conducting two independent finite element analyses, modeling both the original and the upgraded hull, and we completed metallurgical testing that revealed an issue in the main deck which exists on both the 123′ and across the legacy 110 fleet. Extensive strain gage testing has been conducted on a 123′ hull to validate the finite element model and to identify potential problem areas which the model may not show. The parent craft designer, Vosper Thornycroft, has been engaged to evaluate the 123′ hull and provide recommendations. Data is being collected on shaft alignment and maintenance procedures both during the conversion and since, so that the procedures for checking and correcting alignment can be validated for both the 110′ and the 123′. Elements of the 123′ design, including the propellers and the SRP stern-launch system are being reexamined and validated.

We are committed and determined to identify the root cause of the structural problems. Northrop Grumman and Coast Guard engineers are currently reviewing and re-reviewing all available data on the 110′ and 123′ patrol boats in an effort to better understand the cause or causes of both hull buckling and shaft and propeller alignment problems. Depending on the outcome of that analysis the possible outcomes range from removing the boats from service to effecting repairs with testing followed by placing them back in service. Until all analyses are complete, it is premature to speculate on the final cause and the final way forward.

Fast Response Cutter Acceleration: Before Congress in July 2005, then Coast Guard Commandant Collins testified: "A key component of the Deepwater program is the replacement of the Coast Guard's 110′ Island Class Patrol Boat (WPB) fleet. The Island Class patrol boat is a Coast Guard multi-mission workhorse and is rapidly approaching the end of its serviceable life. Under the initial IDS proposal, the 49 110′ Island Class WPBs were scheduled to undergo a conversion to 123′ WPBs by 2010 as a bridging strategy. The 123′ WPBs would then be replaced by the Fast Response Cutter (FRC) starting in 2018. As the first eight 110′ to 123′ conversions were conducted, the Coast Guard found that the 110′ WPB hulls were in much

worse condition than anticipated. This extended the conversion timeline and would have increased projected costs for conversions after the first eight (the first eight were negotiated under a firm-fixed-price contract). An operational analysis of the 123′ WPBs also identified high risks in meeting mission needs, particularly in the post-9/11 environment. The Coast Guard recently decided to stop the conversion project following the first eight conversions. Instead, the Coast Guard plans to advance the FRC design and construction by 10 years, and is analyzing alternatives methods for extending the life of the 110-foot fleet, as discussed above."

Consistent with this testimony, the Coast Guard accelerated FRC design and construction by 10 years. The expanded set of post-9/11 requirements produced a set of required capabilities that exceeded the traditional patrol boat roles filled by the 110s and 123s and other similar worldwide patrol boat fleets. A market study was conducted and concluded that none of the existing similar sized patrol boats would meet these requirements. A series of business case analyses, Total Ownership Cost (TOC) studies and preliminary design efforts showed the benefits of using a composite hull form to meet this demanding set of requirements with a potential to save over $1B in lifecycle cost. The predominate savings came from the superior service life of composites. The Design to Cost constraints restricted the vessel length to 140 feet. In order to accommodate the added capability and equipment required to meet the post-9/11 mission requirements the resultant design was wider for its length than historical and traditional patrol boat hull dimensions. Independent third-party analysis by John J. McMullen and Associates (JJMA) stated: "The review team believes that the FRC does appear to meet or is capable of meeting the requirements" and acknowledges that "The FRC preliminary design represents a design solution to a challenging set of requirements." Additionally, I would like to point out that, contrary to what was reported in the press, the FRC–A did not fail a tank test—a preliminary test was conducted improperly. When this test conducted properly, the FRC–A met all requirements, as is confirmed in the final model test report.

The Coast Guard made the decision to suspend the FRC–A program, as the all composite design is now called, and focus on a parent craft solution known as the FRC–B. This decision seeks to ensure a proven solution to a lesser requirements set. This will enable the additional time required to take the FRC–A through a design spiral, and perform trade analyses to optimize performance to cost including a robust operational test program for the fully capable FRC. The Coast Guard is also performing an additional business case analysis and a technology readiness assessment to confirm viability of the composite approach.

The current patrol boat acquisition strategy includes two paths: FRC–A, mentioned above and FRC–B. FRC–B will leverage existing patrol boat designs to serve as a bridging strategy while the fully capable FRC–A is undergoing design and development. The FRC–B program will select the candidate design from a field of worldwide patrol boat providers and is expected to enter concept design later this year.

I want to assure the Committee that Northrop Grumman will continue to work with the Coast Guard in satisfying its patrol boat mission requirements throughout the life of the Deepwater Program.

National Security Cutter (NSC) Structure and Cost Growth: Designed to replace aging Hamilton Class High Endurance Cutters (WHEC) that have been in service over 40 years, the National Security Cutter (NSC) is a modern, well-armed, high-performance, 421-foot, 4,000-ton frigate-sized naval ship, with manned and unmanned aircraft, stern-launched rigid inflatable boats and secure communications facilities. It provides the Coast Guard with enhanced post-9/11 Homeland security and core mission capabilities (drug interdiction, search and rescue, economic zone, and fisheries protection). The first of the 8 ship class (USCGC BERTHOLF) has been launched and will be delivered to the Coast Guard in the Fall of 2007. The second (USCGC WAESCHE) is also under construction and is scheduled for delivery to the Coast Guard in early 2009.

With regard to the structure, we believe the NSC meets contract requirements/specifications. The NSC design uses the same Data Design Sheet (DDS) standards used in structural design of ships since WWII. The NSC is designed to meet a 30-year service life and many of the structural items raised by the Coast Guard have been addressed and were incorporated in the BERTHOLF and WAESCHE (NSC 1 and 2) prior to production. For example, upgraded steel, thicker steel, modifications to Fashion Plates and Re-entrant Corners, and the addition of 2 longitudinal Hovgaard bulkheads to provide increased stiffness at the stern were incorporated into the design.

With regard to NSC fatigue-life, even the best engineers will have different opinions. Analysis has been performed on the NSC utilizing a relatively new model developed by Naval Surface Warfare Center, Carderock Division (Carderock) utilizing

two different approaches. The difference in the two approaches is whether or not the model is benchmarked by calculating the fatigue strength of proven ship designs with similar operational characteristics and hull form that has been at sea for the desired time. This enables the calculation of permissible stress levels that can be applied to test the new design. The results of these two analyses have generated a responsible dialog between the engineers which will lead to final agreement about enhancements to fatigue structure

Northrop Grumman does not self-certify compliance with the structural requirements in the contract. The BERTHOLF has and will undergo a comprehensive internal and external certification process. The American Bureau of Shipbuilding (ABS) certified 14 Systems Level drawings, including structural design drawings. ABS will also certify 35 ship systems during this acceptance process. These include: Command and Control Systems, Propulsion Plant, Machinery Monitoring and Control, Fuel Systems, Anchoring Systems, and Steering Systems. During the design process, there will be a total of 46 independent third-party certifications prior to or as part of the USCGC BERTHOLF (NSC 1) delivery process. These include; Final Aircraft Facilities, Flight Deck Status and Signaling, Navigation Systems, Interior Communications Systems, Guns and Ammunition Weapons System Safety, DOD Information Security and Accreditation, and TEMPEST. The U.S. Navy's Board of Inspection and Survey (INSURV) will conduct the Ship's Acceptance Trials (AT) when the cutter gets underway later this year.

Cost growth has also been mentioned in the media. Two elements have led to the majority of cost growth on the NSC—increased post-9/11 requirements and the impact of Hurricane Katrina. The NSC that will be delivered to the Coast Guard this year is not the same ship that was first proposed in 1998. Today's NSC has greatly improved operational capabilities that address post-9/11 requirements including Chemical, Biological and Radiation (CBR) protection, a Sensitive Compartmented Information Facility (SCIF) and more robust aviation installations so that the NSC, in addition to its normal embarked Coast Guard aviation complement, will be able to launch, recover and operate U.S. Navy, U.S. Government agency and partner nation manned and unmanned rotary wing aircraft. These enhancements have added approximately 1,000 tons to the displacement, including a one-third increase in electrical power systems, a tripling of air conditioning and ventilation capacity (HVAC), the addition of 25 antennas and a 26 percent growth in the size of the berthing spaces.

It is true that Katrina delayed the delivery of BERTHOLF by several months and added cost to the program. Prior to Katrina, BERTHOLF was the best "first of class" ship in the 70 years that warships have been built in Pascagoula. Even taking into account Katrina, BERTHOLF continues to set new lead ship standards in quality and efficiency with, higher performance to standards than both the first or second Arleigh Burke Class (DDG 51) destroyer and labor utilization measures that routinely out-perform other programs in our shipyard.

Much of what has been done on the NSC program is being transitioned to the rest of the shipyard to other construction programs. In addition to the specific actions as they relate to the NSC program, we are investing $57.3 million of our own money in a new suite of management tools that will increase our visibility, work sequencing capability, material and engineering modeling and capacity and resource planning. These tools will enable the reduction in the number of units we construct to build the NSC. Currently we build the vessel in 45 units and integrate these subassemblies into 29 erection lifts on the ship. The new tool set will allow us to plan and construct the vessel in less lifts, our target is 16, and as we know the less number of lifts the less cost. We are investing in our human capital, process improvement, and our facilities to reduce the cost associated with building future ships.

Thank you for this opportunity to personally update you on the progress of the Deepwater program.

This is the end of my statement. I welcome your questions.

Senator CANTWELL. Thank you, Mr. Teel.

Dr. Mackay?

STATEMENT OF DR. LEO S. MACKAY, VICE PRESIDENT AND GENERAL MANAGER, COAST GUARD SYSTEMS, LOCKHEED MARTIN MARITIME SYSTEMS AND SENSORS

Dr. MACKAY. Good afternoon, Madam Chair and Ranking Member Snowe, and the other distinguished members of the Subcommittee. Thank you for the opportunity to explain the progress

being achieved on the U.S. Coast Guard's Integrated Deepwater System Program. Speaking for the men and women of Lockheed Martin, we're proud to be associated with this critical program, and we appreciate very much the continued support of this committee.

Deepwater is modernizing the Coast Guard by re-capitalizing aging assets, providing new assets, and expanding capabilities. Lockheed Martin is responsible for four of the five Deepwater domains. First, aviation, including the refurbishment and upgrades of existing assets, such as the HH–65 helicopter, and the HC–130H aircraft. Production of new assets, such as the HC–144 maritime patrol aircraft, missionized C–130J aircraft, and unmanned aerial vehicles, and management of a service contract covering the MH–68A HITRON helicopter. Second, Lockheed Martin is responsible for C^4ISR, the command and control network. Third, integrated logistics, the processes and systems that support fielded assets. And fourth, systems engineering and integration, the process to make sure all Deepwater assets can work together as a system.

We work within the Integrated Coast Guard System's joint venture with our partner Northrop Grumman, to ensure that communications, aviations, and logistics systems are properly coordinated with the program's ships and ship systems.

The purpose of ICGS is to provide for rapid allocation of work to the two companies, and to ensure collaboration and cooperation between the two companies. Today, when I refer to ICGS or separately to the role of Lockheed Martin, this means the role of Lockheed Martin within ICGS.

Together, Lockheed Martin and Northrop Grumman are using more than 600 suppliers in 42 states, plus the District of Columbia. We maintain an active database of more than 3,000 potential suppliers. In assessing the program, I think it's very important to maintain emphasis on implementation of the Deepwater command and control network, C^4ISR, a very awkward acronym for Command and Control, Computers, Communications, Intelligence, Surveillance and Reconnaissance. This is the network glue that permits various assets, including ships, aircraft and shore stations to work together to achieve a common purpose. Modern civil, commercial and military systems are dependent on the value delivered by the integrating power of the network. This is the core responsibility of Lockheed Martin.

The initial system deployment has already resulted in measurable progress with the Coast Guard's rescue, enforcement and interdiction missions on the high seas. Lockheed Martin is accomplishing a high rate of software reuse, as well as system commonality and integration using rigorous application of proven system engineering processes and capabilities.

Overall, 65 percent of Deepwater's software is reused from government or commercial sources. In addition, the application of off-the-shelf software permits Deepwater to take advantage of the rapid changes in the commercial marketplace and the investments which commercial firms make in their best-of-class technologies.

This approach is the key to commonality, interoperability, efficiency, and effectiveness. All of the Coast Guard's 12 high-endurance and 27 medium-endurance cutters have received two command and control system upgrades. As for shore sites, there are a

total of 12 on track to receive upgrades, 2 communications area master stations, 8 districts, one sector, and of course, headquarters.

The first medium-range surveillance maritime patrol aircraft, the newly designated HC–144, has been transferred to the Coast Guard. It arrived at Elizabeth City, North Carolina on December 20, 2006, and I am happy to say that it was 9 days ahead of its contractual schedule. It's now undergoing missionization that will be completed in April.

The second aircraft was accepted by the government on January 25, 2007, and the third aircraft is in flight testing.

We're working to complete re-engining and upgrading of the HH–65 Charlie helicopter, with 65 of 95 helicopters re-delivered to the Coast Guard to date. The HH–65C can fly faster, twice as far, and with twice the payload as its predecessor.

The service contract for the Helicopter Interdiction Tactical Squadron, or HITRON, based in Jacksonville, Florida, has been renewed for a fourth year. These 8 helicopters are equipped with airborne Use-of-Force capability, and have had significant impact on illicit drug interdictions. Last May, they celebrated their 100th successful interdiction.

All of our designs and improvements are based on system engineering trade studies, analyses and technical considerations. In addition, the industry's performance has been closely supervised by the Coast Guard with additional oversight by the Department of Homeland Security and the Congress, and of course, the Government Accountability Office. Each of these multiple reviews has provided constructive recommendations, as requirements continue to evolve.

Thank you again for the opportunity to present, and to explain the progress we are achieving on the Deepwater program. I look forward to answering your questions. Thank you.

[The prepared statement of Dr. Mackay follows:]

PREPARED STATEMENT OF DR. LEO S. MACKAY, VICE PRESIDENT AND GENERAL MANAGER, COAST GUARD SYSTEMS, LOCKHEED MARTIN MARITIME SYSTEMS AND SENSORS

Good Morning, Madam Chairperson and distinguished members of the Subcommittee.

Thank you for the opportunity to explain the progress we are achieving on the U.S. Coast Guard's Integrated Deepwater System program. Speaking for the men and women of Lockheed Martin, we are very proud to be associated with this critical program. The Coast Guard is a key national asset for assuring the security and safety of our country's maritime transportation system. Each of us, in accomplishing our daily tasks on the program, has a deep sense of the importance of achieving the very best for the Coast Guard and our Nation.

Overview

The Integrated Deepwater System program is delivering both new and upgraded fixed-wing and rotary-wing aircraft; new communications systems that are making a significant contribution to improved mission performance; and, the logistics systems necessary to support fielded assets. We understand the Integrated Deepwater System will continue to evolve. To meet this ongoing challenge, Lockheed Martin is applying a disciplined system engineering approach to the program. This will continue to be vital for achieving more robust capabilities given fiscal realities—a one-asset-at-a-time recapitalization approach would be unaffordable. Lockheed Martin is committed to providing our best talent and capabilities for supporting the Coast Guard.

Lockheed Martin is primarily responsible for four Deepwater domains: System Engineering and Integration, C^4ISR (the command and control network), Logistics

and Aviation (refurbishment of existing assets and production of new assets). Lockheed Martin's goal is the full application of system engineering methodologies to establish the best mix of assets and introduction of new capabilities as well as implementation of the associated logistics systems. Most important is maintaining emphasis on the implementation of the Deepwater system-wide command and control network. C^4ISR (Command and Control, Computers, Communications, Intelligence, Surveillance and Reconnaissance) is the network "glue" that permits various assets including ships, aircraft and shore stations to work together to more effectively and efficiently achieve a common purpose. Thus, the C^4ISR domain is of particular importance as most modern civil, commercial and military systems are dependent on the value delivered by the integrating power of the network.

Key Achievements

We are making good progress and are delivering significant new and upgraded capabilities. At the same time, we recognize the system level effects of networking are essential to achieving the level of mission performance needed by the Coast Guard. Lockheed Martin is accomplishing high rates of software reuse as well as system commonality and integration by the rigorous application of proven system engineering processes and capabilities. In addition, we are managing implementation of support systems for all Deepwater program domains. The Lockheed Martin team is working closely with our Integrated Coast Guard Systems, LLC (ICGS) joint venture partner, Northrop Grumman, to ensure that electronic equipment developed and produced under the cognizance of the C^4ISR domain is appropriately configured for installation on the ships.

Every one of the Coast Guard's 12 high-endurance and 27 medium-endurance cutters have received not one but two command and control system upgrades—giving the fleet markedly improved capability to seize drugs, interdict migrants and save lives. As for shore sites, there are a total of 12 on contract: two Communication Area Master Stations, eight Districts, one Sector and Headquarters. Use and reuse of commercial-off-the-shelf, government-off-the-shelf and fielded maritime systems are being maximized for commonality and interoperability. The application of off-the-shelf software permits Deepwater to take advantage of the rapid changes in the commercial marketplace and the investments which commercial firms make in their best of class technologies. This will facilitate Coast Guard interoperability with civil and international systems, a key consideration given their mission mix.

The National Security Cutter is using 75 percent of the U.S. Navy's Open Architecture Command and Decision System. The Command and Control System for Maritime Patrol Aircraft employs more than 50 percent of the functionality of the Navy's P–3 Anti-Surface Warfare Improvement Program. The Operations Center consoles on the National Security Cutter utilize more than 70 percent of the design of the Navy's UYQ–70 display systems. Use and reuse of available software and systems is the key to commonality. In addition, this approach takes greatest advantage of the work undertaken with the Navy to establish the best Human System Interface including workspace ergonomics, viewing characteristics, input devices and overall system architecture.

The first medium-range surveillance maritime patrol aircraft, the newly designated HC–144, has been transferred to the Coast Guard. It arrived at Elizabeth City, NC, on December 20, 2006 and is now undergoing missionization work that will be completed in April. The second aircraft was accepted by the government on January 25, 2007 and the third aircraft is in flight testing. The second aircraft will now be delivered to Elizabeth City for missionization and two crews are already in training. At the same time, we are working to complete re-engining and upgrading of HH–65 helicopters with 65 of 95 helicopters delivered to date. This project was part of the original Deepwater program plan. However, at the direction of the Coast Guard, it was rapidly accelerated due to safety of flight issues. Lockheed Martin and American Eurocopter working with the Coast Guard Aircraft Repair and Supply Center are now producing upgraded helicopters ("Charlies") that can fly faster, twice as far and with twice the payload.

Six long-range surveillance C–130J aircraft are undergoing missionization and will be delivered within 15 months after receipt of the contract with fully interoperable command, control and communications systems. The first aircraft was inducted for missionization at Greenville, SC, on December 19, 2006. In addition, the service contract for the Helicopter Interdiction Tactical Squadron (HITRON) based in Jacksonville, FL, has been renewed for a fifth year. These eight MH–68A helicopters are equipped with airborne Use-of-Force and have had a significant impact on illicit drug interdictions. The squadron celebrated its 100th interdiction last May.

Industry's performance has been closely supervised by the Coast Guard with additional oversight from the Department of Homeland Security, the Congress and the

Government Accountability Office. Each of the multiple reviews has provided constructive recommendations as requirements and funding levels continue to evolve. The results so far indicate that Deepwater has made a dramatic difference in the effectiveness of the Coast Guard with regard to the numbers of drug seizures, migrant interdictions and lives saved. Coast Guard statistics show double- and triple-digit percent improvements as Deepwater assets and upgrades enter the fleet.

Strategic Context of ICGS

The Deepwater program is modernizing the Coast Guard by providing new assets and expanding capabilities in aviation, ships, shore stations, logistics, and command, control and communications systems. The ICGS joint venture between Lockheed Martin and Northrop Grumman was designed as a low overhead contracting vehicle. Its purpose is to provide for rapid parsing of work between the two partners while at the same time achieving close collaboration and cooperation. It is important to note what it is not. The ICGS joint venture is not a replacement for Coast Guard decisionmaking. All designs and improvements are based on trade studies, analyses, and technical considerations. But make no question about it—the Coast Guard is the decisionmaker and contracting authority and all major acquisition decisions are reviewed and approved by Coast Guard senior leadership. ICGS utilizes the depth of capabilities and experience of its partners to provide solutions in accordance with Coast Guard requirements. The joint venture partners are utilizing more than 600 suppliers in 42 states plus the District of Columbia. In addition, ICGS maintains an active database of more than 3,000 supplier-product applications.

The Deepwater program began in 1997 as competing teams were established to develop proposed solutions for bidding the program. In fact, proposals were submitted to the government less than 2 weeks after 9/11. Since then, the ICGS team was awarded the Deepwater program and successfully accomplished a number of changes. Most significant were those resulting from the dramatically increased Coast Guard operating tempo in the post-9/11 environment. This means that legacy equipment began to wear out far more rapidly than had been projected. A good example is the HH–65 helicopters mentioned above. While the ICGS team's approach always included re-engining of this equipment, the original plan was to be accomplished over a longer time period. Nevertheless the team was able to process the urgent requirement for re-engining and more than two-thirds of the fleet have already been upgraded and returned to service. It is this inherent flexibility of the ICGS joint venture stemming from the deep capabilities of its partners that will facilitate our working with the new acquisition organization planned by the Coast Guard.

The Way Ahead

Our overarching goal is to provide more capability to the fleet, sooner. We are dedicated to analyzing and recommending approaches for maximizing the value delivered to the Coast Guard, in accordance with the customer's view of value, not that of industry. This requires the best talent from each corporation. ICGS works closely with Coast Guard personnel to assure constant communications and improved working relationships. The strategic policy changes that have occurred since 9/11 must be factored into problem solving. The Coast Guard and the Department of Homeland Security have needs that can be satisfied by the Deepwater program and its approach to value delivery. The way forward will be difficult, but given the capabilities of the participants and the strategic imperative to better outfit our Coast Guard so the safety and security of our Nation is improved, the Deepwater program is eminently achievable.

Thank you again for the opportunity to present and explain the progress we are achieving on the Deepwater program, I look forward to answering your questions.

Senator CANTWELL. Thank you, Dr. Mackay, and thank you to each of the panelists.

Captain Jarvis, I would like to start with you. I'm concerned that the Coast Guard reinterpreted the performance of the National Security Cutters—I'm sure we could have a long conversation about that, given how much has been written in the various reports about that and the testimony here today—but, I'm concerned that this also occurred in the 123′ conversion. Do you think that that's a problem? Or were any of the other assets where this issue of reinterpreting what the performance requirements are was problem-

atic across, not just one vessel, but across several of the new products that the Coast Guard was seeking?

Captain JARVIS. I understand the question, Senator.

This problem did exist. And it's somewhat suspect because the construct of the contract itself. In the fact, with the exception of the NSC, which is the only asset that really had any level of refined performance requirements, the rest of them were up to the three industry teams to give us their proposals.

One of the contract deliverables with those proposals was their generated performance specification for that particular asset. And we'll start with the 123′.

When the 123′ was included in the package, there was a proposed performance specification that was going to be with the 123′. That proposed performance specification would have been the only document we had to try and pin the contractor down to the specific performance of that asset.

Through the maturity of the 123′ when it first got to Bollinger, the performance specification kept on getting modified, and modified and modified, to the point the "as accepted" performance spec for the 123′—and I think that's what the title of it is—the "as delivered" performance spec, doesn't look exactly like the proposed performance spec that did come with the contract. So, it did change.

So, what does that mean? It means that, by the contract, the contractor did, in fact, give us the performance for the 123′, because the performance spec was written to what the 123′ could do, instead of the other way around. It did happen. And, it's not just in the surface side.

Senator CANTWELL. Well, given that there are cost overruns now on several of these vessel plans, do you think this committee should be looking at recouping some of these costs to the taxpayer? Given that—as I've indicated—I think we're talking about hundreds of millions of dollars, or as Senator Kerry projected—and I'm assuming he's talking about bills yet to be received—billions of dollars for ships that either have had to be pulled, or never are going to be deployed, or have structural challenges to their current deployment.

Captain JARVIS. Senator, I didn't have personal knowledge of exactly how the money flowed in and out of the Program. I had a hard enough time just trying to find out how the engineering was working. But, as a taxpayer, I would sure be asking those questions. If so much money was devoted to these assets, and they're not working, shouldn't there be some sort of a recoup coming back? So, as a taxpayer, I would clearly ask that question, yes.

Senator CANTWELL. Do you think the Coast Guard, through a more traditional process of procurement that has been followed in the past, could do a better job in delivering these assets?

Captain JARVIS. Senator, I think I will agree very much with Admiral Allen, in the fact that our past procurements were relatively simple, in the fact that they were one asset, or a fleet of one asset. This one was definitely more complex. But, I do believe, that the traditional way of procuring assets, if we use the traditional acquisition manual model for what I always call that, healthy tension between the various directors, would have had significantly more

power given to the technical authority, that being the G–S engineers, to ensure we may not be here today.

Senator CANTWELL. Thank you.

Mr. Teel, you say the Fast Response Cutter design—I don't—is OK, I guess. That it needs four engines just to operate, but I know there has been some internal discussion about the design and the fact that it is 52 percent heavier than the normal design. So, I want both of you, actually, Captain Jarvis and Mr. Teel to respond to that, do you think that's meeting the Coast Guard's needs?

Mr. TEEL. Madam Chair, as I said in my verbal testimony, in order to achieve the full set of requirements that we were responding to for the Coast Guard, the result was what truly is a non-traditional patrol boat design. Because of the requirements, and the requirements were constrained also by the cost, because we were operating under a design-to-cost cap, which constrained the length of the vessel. So, it resulted in a vessel that was significantly out of the design lanes of traditional patrol boats. No patrol boat in the world—we did a survey of that, as did the Coast Guard—was able to accommodate all of those requirements, and the design was unique.

That design was evaluated independently as one that would satisfy the total set of requirements, albeit, it was heavier and did require additional engines.

Senator CANTWELL. Captain Jarvis, do you have any comments on that?

Captain JARVIS. I'd agree the fact that the design for the FRC was, in fact, much heavier than we were expecting, and was well outside of parametric equations that naval engineers use to make determinations as far as hull resistance and propulsion.

We affectionately called the FRC design a "brick" in the fact that, even a brick—if you put enough horsepower on it—you can make it plane across the water at 35 knots. This design would meet the performance specification, that was never our contention. It would meet the performance specification. But there were other aspects that we, as the naval engineers, always utilized when we were looking at the proposal. The long-term maintenance cost—four engines on a patrol boat is a rather significant maintenance requirement for us long-term. There were much more elegant ways of achieving the predominance of the requirements than the much heavier FRC design with four engines. So, we never contended it wouldn't meet the performance. It's just that we didn't think that it was the best way of doing it.

Senator CANTWELL. Thank you.

Senator Snowe, did you have some questions?

Senator SNOWE. Yes, thank you.

Thank you, Captain Jarvis for your willingness to come forward and give us the breadth and depth of the picture in the Coast Guard in this monumental failure. I mean, it's just replete with failures, and I know that some of this may be able to be explained somewhere, but obviously something went terribly wrong within the system, and we've got to learn from it, understand it, deal with it realistically and see how we can go forward.

But first and foremost, it's going to be critical to understand the nature of what went wrong, and how we tackle modifying the prob-

lems that face us at a time in which the men and women depend on these assets for the future. Given the fact that the Coast Guard is the third oldest naval fleet in the world. And here we are today dealing with major structural deficiencies with this re-capitalization program.

At any time, Captain Jarvis, when there was a disagreement with systems integrators and engineers such as yourself, did the Coast Guard ever come to you, take up your suggestions with respect to the concerns that you had? I mean, where did they decide between the disagreements that might exist within this program, and obviously it did for a prolonged period of time, obviously they were aware of it. Did they ever follow through on any of your concerns and recommendations, and how it should be done differently, where the deficiencies manifested themselves?

Captain JARVIS. Senator, the answer to your question is very simple, because you asked for an all-inclusive answer. And, I'm sure somewhere in those 7 years I was engaged with the program, the Deepwater Program listened to something I said. Predominantly, they didn't. When we would raise the issues in that Integrated Process Team environment, where collaboration was supposed to be the way of doing business, more often than not, the engineering concerns that the G–S Director and engineers brought up were discussed, maybe documented and whatever the mechanism was for deciding how the outcome was going to be, it typically—it typically—did not fall in alignment with what our concerns were.

But, to answer your specific question, Senator, I'm sure that there were some places, somewhere along that timeline where one of the IPTs that we were engaged with, at least, listened to me.

Senator SNOWE. Well, you've obviously given some very substantive, in-depth testimony over your service during this Deepwater acquisition process, and it's regrettable to me that they didn't follow up on some of the serious concerns that you raised at a time in which many of these problems might have been averted. Do you think we would not be in this situation today, had they followed up on some of these serious questions? What do you think the interest was? Just to keep it on schedule, irrespective of the performance failures?

Captain JARVIS. Senator, the coined phrase we heard most often was "ruthless execution of the schedule."

Senator SNOWE. We heard that consistently before this committee.

Captain JARVIS. And we were given a healthy dose of that every day. To answer your specific question, would we be here if we were listened to more? I suspect not.

I'm a disciple of what's called "root cause analysis in engineering." When you have a problem, you go all the way down to its most basic, fundamental problems to make sure it doesn't happen again. The most common problem that occurred was almost everything that we're talking about today is the fact that the G–S engineers were not given their ability to be the technical authority that they were in traditional contracts. Admiral Allen has seen that as a very significant problem, and I commend his efforts to making sure that that was his first overt change that should have been done years ago.

So, had that been in place when this contract was first put in place, I don't think we'd be here.

Senator SNOWE. They sort of performed an advisory role, at best?

Captain JARVIS. Senator, we were less than an advisory role. Most people considered us as a necessary nuisance. We were there because we were a member of the IPT. They listened to us, most of our comments were, the favorite phrase was "adjudicated," that doesn't mean that they were resolved, it means most of the times we were just noted in the discussion. We had a very, very difficult time trying to make anybody respect, honor and listen to what our concerns were. And the fact that we're here today is, I think, testament that maybe we should have done it better.

Senator SNOWE. Mr. Teel, and Dr. Mackay, I don't know who to ask this question of—the contract is self-certified? Is that standard procedure? To allow contractors to self-certify?

Dr. MACKAY. Senator, I can talk about, in the aviation and C^4ISR world, there are a number of outside certification agencies. For C^4ISR, the Coast Guard has liaisoned with SPAWAR, which is a Navy organization, and in aviation, the new HC–144, we had an international certification in the country in which it was manufactured, it was provided by INTA, which is a Spanish aviation authority. And then, as it comes back here, the Coast Guard, I think, collaborates with NAVAIR. So, there are a number of independent government certification and accreditation agencies that we're subject to in aviation and C^4ISR. I would ask Mr. Teel if——

Senator SNOWE. Well, I guess, the idea here is that the Coast Guard is allowing you to certify your own ship designs. Where is the independent analysis?

Mr. TEEL. Senator, I'm not sure where the actual allegation about us self-certifying comes from. I recognize it was identified in the IG report. We, in fact, go through a design process and—in many cases, depending on what has been selected in the contract—ABS does certification of several elements of the ship design. In fact, the designs themselves, the drawings are reviewed by the Coast Guard, so I'm unclear about what's meant by the allegation that we self-certify. The actual ship itself will be tested by the INSURV, Board of INSURV by the U.S. Navy, that's who will do the final testing, and recommending of the acceptance of the ship, so I'm unclear about what is meant by us doing self-certification, because the process is reviewed along the way.

Senator SNOWE. Well, the Commandant, and the Inspector General indicated that.

Mr. TEEL. Senator, I've told you what I know and understand about the way the contract's structured.

Senator SNOWE. I just want to know. Obviously, they indicated that, and so I think that that's probably the case, in terms of the practice.

Mr. TEEL. Well, what we can do is submit to you the way the contract—as further data—how the contract is structured in the way the various elements are approved and certified.

Senator SNOWE. I think the key here is that there is not independent analysis, I mean, that's the problem. Do you acknowledge there are any problems in the contract, from the standpoint of the government, I mean, the Coast Guard? Do you recognize any prob-

lems with the National Security Cutter deficiencies? Any problems at all? Did you raise problems with the Coast Guard?

Mr. TEEL. Well, we certainly recognize that there is a significant issue that's under review about the fatigue-life of the ship, yes, ma'am. I do.

Senator SNOWE. Right, and did you acknowledge it at the time, at any point during the construction of the ship?

Mr. TEEL. All during the design of the ship, there was interaction with the Coast Guard on the design. As Captain Jarvis said, our role was to conduct the design and then provide that information to the Coast Guard. It went through the IPT processes, as described. That's not unusual, the dynamic tension was there. I think the question at issue was whether or not the way that we proceeded was fully accepted by all elements of the Coast Guard. They were accepted in the design reviews, as it was provided to us. We were not privy to what took place in terms of how the decisions were made, about what we recommended in the path that we were taking.

Senator SNOWE. No, I understand that. The Coast Guard obviously made some serious mistakes in this regard. Without question, given the whole structure. So, I had no doubt that you would say that. I think the point is, here, where does the responsibility lie, in the final analysis? I mean, you've got some monumental problems, whether you agree or disagree, but we are where we are. The Fast Response Cutter—they had to look for an interim solution to this problem. Even the Commandant said in his testimony today, it's unacceptable.

So, we have that problem. And we have a problem with the NSC, we've got to figure out not only the modifications, whether or not they will address the problems, but we don't even know what the cost will entail. And as I understand it, and I disagree with it, we're going to bear the cost. The Federal Government is going to have to bear the cost of these substantial modifications. So, the fact is, there wasn't any built-in incentive, even on your part, to bring these problems to the Coast Guard's attention. If it was a so-called "cost-plus contract," then there's no incentive to correct those deficiencies at the point in time, and to recognize them and to halt the construction.

Obviously, there was a problem, because no one brought it to our attention. I mean, that's the point here. And, it just went on as Captain Jarvis said, that ruthless execution. But that shouldn't mean the expense of the cost of the structural failures that are inherent in the design at this point, that we now have to grapple with, and that's the point here.

We're facing a serious situation, and I just wonder with all that has been said here today, the Inspector General's report, what Captain Jarvis said, some of the issues—do you acknowledge, do either of you acknowledge that there were problems with this contract? With the NSC? Do you agree that there were any problems?

Mr. TEEL. Senator, sorry, as I said in my written testimony and tried to summarize in the verbal—the National Security Cutter was designed to the same standards that ships have been designed to since World War II.

Having said that, we recognize that any design process has issues that need to be dealt with along the way. Those issues have been dealt with, with the exception of the fatigue-life prediction issues. And, again, depending on how one runs analyses about fatigue-life prediction, you will get very different answers.

We believe strongly that the NSC will have a service life of at least 30 years, using the models that have been used to forecast, predict fatigue-life of the NSC. Depending on the characteristics that you include in that model—and we've run it against both the NSC, that model, and against ships that have been in service for many years—the DDG–2, the Navy vessel, and the Hamilton class. The predictions, depending on what assumptions you make, say that those ships will last 3 to 8 years, ships that have been in service for 30 to 40 years.

Those same kind of differing predictions that are used with the NSC will show it will last either 53 years, or 8 to 10 years. And that issue, those issues of fatigue-life, when the first onset of a crack in a structurally significant area appears is what's at issue. The structure of that ship, as the Commandant's testified at other hearings, the ship is safe, and capable of performing its operations.

Senator SNOWE. I wish we could go on.

Senator CANTWELL. Senator Snowe, I am sure, on this point, we could go on, and I thank you for your question, just the vote has started, and I believe that you are onto a question that is critically important, and that is, if the system integrator, basically, is responsible for developing the assets, and then determining whether they've even met the performance standards, aren't they just writing us a check, a blank check, and saying, "Here's the bill," and changing the process along the way.

I know that, Dr. Mackay and Mr. Teel, you disagree with that assessment, but we're going to have to submit more questions for the record for you to answer on this. Because I don't think this is the last of this hearing.

And I've asked myself this question—how did we get into this situation? And innovation is important, but I was struck by a thesis paper that was online, done by an MIT graduate in 2004, on this very subject. Surprising—sometimes you can get the most blunt and honest assessments about what's going on in Washington, D.C. outside of Washington, D.C.

Here's what he wrote about this situation. He said, "Given the risks of placing an organization's future in the hands of another organization (namely the systems integrator contractor), one wonders why the Deepwater Program was pursued in a non-traditional manner that emphasized a system approach and mission performance. Several potential arguments exist.

Perhaps the Coast Guard's limited success in retaining talented individuals had developed a gap in internal project management capabilities. Perhaps the Coast Guard merely wanted to go 'faster' than its own capabilities would allow, and an external systems integrator could serve as surge capacity. Perhaps cost management was the primary objective, and the use of a single contractor streamlined the acquisition process and allowed for consistency in staffing and contract administration. Perhaps the Coast Guard wanted to shift the risk of system development to an external

party, an organization to carry the blame if and when the modernization process failed in any way. Perhaps the Coast Guard was expending some of the potential capital it had developed with Congress to experiment with innovative contracting.

While all of these explanations are possible, the most compelling story is presented by examining status imbalances, and organizational competition at two levels: among internal Coast Guard communities, and across the Coast Guard's competitor organizations. External status dynamics led to a Coast Guard focused on securing the services of a Tier 1 contractor, one capable of pulling their funding needs through the system. For as noted by Deepwater Program Executive Officer Rear Admiral Patrick Stillman, where he quoted,

'A partner with Tier 1 supplier affords one the opportunity to leverage their network, influence, and political savvy in terms of funding obtainment and sustainment, as well as program acceleration ... Selection of a Tier 1 contractor was a very important consideration in a program of this scope and scale, you just can't get that kind of leverage from a Tier 2 supplier.' Quote, 'Vance Kaufman,' ho was the Lockheed Martin CEO), 'doesn't have a problem getting on Tom Ridge's calendar, and that helps in a way that no Tier 2 supplier can ever help.'

Now, I believe in integration, and I believe in innovation, but gentlemen, I think we are at a point where now the taxpayer is paying a higher bill because of a lack of oversight and accountability than was previously there in procurement processes with the Coast Guard. I get that this was an ambitious program, and one that the Coast Guard wants to continue to implement, but I think this committee has many more questions to answer.

I thank you for your testimony today, and we will continue, Senator Snowe, working on this issue to resolve this in the best interest of the taxpayers.

This hearing is adjourned.

[Whereupon, at 4:55 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

Today's hearing should shed some light on the challenges the Coast Guard's Deepwater program has encountered, and provide insights on options for moving forward.

The Deepwater program is essential to the Coast Guard's success in the post-9/11 world. Considering the aging condition of the Coast Guard fleet and the Coast Guard's expanded responsibilities, the Deepwater acquisitions are vital to ensure that the Coast Guard can carry out its many security and other responsibilities, including search and rescue, fisheries enforcement, and drug interdiction. It is imperative that the Deepwater assets meet the needs of the Coast Guard in this changing environment. It is equally important that American tax dollars are well spent.

The recent release of two reports by the Department of Homeland Security Inspector General (DHS IG) on the National Security Cutter (NSC) and the 123-foot patrol boats, and a major study by the Defense Acquisition University raise concerns about the Deepwater program and the manner in which the Deepwater contract has been managed by the Coast Guard.

As the Committee with oversight responsibility for the Coast Guard, we have an integral role to play to ensure that the Coast Guard obtains the tools it needs and that any problems with this major project are appropriately addressed. Admiral Allen knows that this Committee has confidence in his extraordinary leadership and proven record and we are committed to working with him to solve this problem.

I thank all of the witnesses for appearing before us today and look forward to their testimony.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO ADMIRAL THAD W. ALLEN

Question 1. I appreciate that the Coast Guard is taking important steps in the right direction, such as creating its *Blue Print for Acquisition Reform.* But as I mentioned, the Defense report called for much greater changes, including that the Coast Guard should "define and implement a revised acquisition strategy that does not rely on a single industry entity or contract to produce or support all or the majority of USCG capabilities. The strategy should incorporate the use of business case analyses to balance the benefits of robust competition, the USCG organic support infrastructure, and trusted supplier relationships." Does the Coast Guard actually intend to re-enter a contract with ICGS in the face of this advice?

Do you really believe after all of these failures and the advice of the Defense University that the lead systems integrator structure is the right approach for the Coast Guard, and that all you need are a few small changes to the contract?

It is my understanding that the Coast Guard is not obligated to continue under its present contractual arrangement with ICGS if you determine it is not to the Coast Guard's benefit. Is that accurate?

Answer. The Coast Guard has not ruled out continuing the contract with ICGS, but only if we determine that it is in our interest. We are considering all procurement options. The Coast Guard recognizes that Deepwater acquisition has suffered setbacks. We are in the process of a thorough examination of all issues that have an impact on the program success.

To that end, the Coast Guard has formulated seven strategic initiatives to reform the Coast Guard's role in systems integration, specification standards, and logistics. The execution of these initiatives requires careful planning to avoid unintended consequences to existing contracts that could create additional costs and schedule delays. Also, the Coast Guard is restructuring its acquisition organization and processes to facilitate implementing these initiatives.

Under the Federal Acquisition Regulations, any contract may be terminated for default if the contractor fails to perform adequately according to contract requirements. In other circumstances, if it is in the Government's interest, any contract

may be terminated for convenience, regardless of contractor performance. However, no contract termination is valid unless the Government satisfies the requirements of the Federal Acquisition Regulation (FAR), Part 49.

In the case of Deepwater, the proposed restructuring will require at least 6 months to fully implement. Therefore, we need to preserve the ability to continue contracting with ICGS until we complete restructuring.

Question 2. A key reason for using the unique Lead System Integrator approach was to provide integrated assets. Tell me, what is integrated about the 123-foot vessels, the Fast Response Cutter-B, and the National Security Cutter?

Answer. An integrated approach is necessary to make sure that the different types of assets needed by the Coast Guard can operate together and in order to prevent systems and communications incompatibility. Different types of assets are needed for different missions. In a given mission, a combination of assets will be needed. It is imperative that a cutter, a helicopter and a communications system be able to work seamlessly.

Question 3. Isn't it possible to integrate Coast Guard assets without relying on a single entity to manage the entire 25-year, $24 billion contract?

Answer. It is possible to integrate Coast Guard assets without relying on a single entity to manage the entire 25-year, $24 billion contract as long as the Coast Guard establishes an internal organization that would be responsible for the "systems engineering and integration" functions. It is imperative that such internal organization be established to ensure proper systems engineering and integration of Deepwater assets, including enterprise architecture and planning; portfolio analysis; cross program support; and test/evaluation. This will take time, but the new Acquisition Directorate will be moving toward that goal.

Further, to assure that our different assets develop in an integrated manner, an oversight mechanism is needed that will assure interoperability. We are examining whether this objective can be achieved by means other than using a single entity.

Question 4. Do you continue to think that the mix of assets proposed by ICGS in their Deepwater solution is the right mix, or are there other vessels, aircraft and systems that might serve the Coast Guard well?

Answer. The mix of assets was developed in 2002 and revised in 2005. Since the implementation plan extends out to 2027, there will likely be changes to the mix to meet changing missions, take advantage of new technologies, and address threat changes in the operating environment. However, given that the goal was to replace Coast Guard Deepwater assets with an integrated system, the basic asset architecture remains sound.

Question 5. Other than the relatively minimal incentive for competition in the revised award term criteria, what power does the Coast Guard have to ensure adequate competition under the Deepwater contracting approach? Is the level of competition adequate in your opinion?

Answer. The Coast Guard has the legal authority to require competition at the subcontract levels through contract terms and conditions. In addition, the contracting officer can reserve the right to consent to subcontracts prior to their award to ensure that adequate competition has been obtained. While the Coast Guard is taking a larger role in the integration of the Deepwater Program and it will continue to evaluate any assets or capabilities that can be competed outside the Integrated Coast Guard Systems indefinite-delivery, indefinite-quantity contract. Where it makes good business sense to do so, the Coast Guard will conduct its own competition. These current and future efforts will ensure adequate competition. Therefore, we believe we have a good level of competition.

Question 6. You have mentioned that the Coast Guard would be open to utilizing the Navy's contracting expertise and maximizing buying power and minimize risk by purchasing existing assets, such as the Navy's Unmanned Aerial Vehicle "Fire Scout". I also see in your FY08 budget request that the Coast Guard plans on delaying funding for the Offshore Patrol Cutter to study whether the Navy's Littoral Combat Ship might work for the Coast Guard. Does this approach signal a new Coast Guard strategy?

Answer. I do not consider this to be a new strategy. The sixth strategic element of the USCG's Maritime Strategy for Homeland Security is to Ensure Readiness of the Coast Guard for Homeland Defense. One of the near-term initiatives to support that strategic element includes fielding Deepwater Assets to increase Operational Capability and DOD compatibility. If we can use assets that are being developed by our sister service, the U.S. Navy, we increase compatibility. We also have a National Fleet Policy Agreement with the U.S. Navy, signed by ADM Mullen and ADM Collins last March, that states our ". . . forces will be designed, whenever possible, around common command, control, and communications equipment and operational,

weapons and engineering systems, and include coordinated operational planning, procurement, training, and logistics." It also makes sense to look at alternative assets if they can do our missions and do them at a lower cost. Often this lower cost comes from Navy accomplishing the initial training and logistics, with the Coast Guard paying the Navy for the incremental cost of supporting the Coast Guard.

Question 7. On June 21, 2005, this subcommittee held a hearing on the revised Deepwater Implementation Plan. At that hearing I asked your predecessor, Admiral Collins, if using a lead systems integrator is the best way to control costs, especially given the experience of the Army with the Future Combat System acquisition. Admiral Collins responded to me that the lead systems integrator mitigates risk to the Coast Guard versus using a traditional procurement approach. That if the Coast Guard were to do this acquisition in-house, it would be at least 15 percent more costly.

Now, 2 years later, you're dealing with huge cost overruns with the NSC, FRC, and other assets. Does the Coast Guard still hold the views expressed by your predecessor, that the lead systems integrator is the best approach and will produce the best value for taxpayers?

Answer. This method is a way to make sure that different types of assets will work with each other. It is also a way to avoid the risk of duplicating functions that can occur when conducting semi-autonomous acquisition. At a time in which many Coast Guard assets are reaching the end of their service life in a 10-year period and in a time of constrained budgets, it is important to maximize interoperability and minimize duplicative efforts.

In 2002, the Coast Guard could not effectively manage the acquisition with in-house resources. Handling the acquisition in-house would have led to increased risks and increased costs. However, the Coast Guard is now taking a larger role in the integration of the Deepwater Program and I have made substantial changes to improve government oversight and control of the program. While we expect some cost overruns on the NSC, I think it is important to point out that most of the cost increases on the NSC cover increased post-9/11 capabilities. Increased post-9/11 capabilities include Shipboard Sensitive Compartmented Information Facility (SCIF), Airborne Use of Force (AUF), and Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) defense.

We are currently reviewing all aspects of the next award term contract to ensure that the role of the system integrator is subordinate to Coast Guard management and oversight.

Question 8. Admiral, I am disturbed by the IG's findings that the Coast Guard is reinterpreting the performance standard for the National Security Cutter in a way that weakens the requirement, from 230 days "underway" to 170 to 180 days underway. The contract seems pretty clear on its fact that 230 days is the requirement. Can you please comment on that, Admiral?

Answer. The Coast Guard did not change or decrease a performance standard but rather clarified an ambiguity in the Performance Specification between the narrative portion of paragraph 3.1.1.2 and Table 3. Section 3.1.1.2 that indicates the specifications states, "The ship is expected to be underway 230 days in an average year." Chart 3 lists Days Away From Homeport (DAFHP) as 230 days per year. DAFHP is a more inclusive term which has Days Underway as a subset. Table 3 details indicate the following:

Days away from home port	230
Transit days	20
Logistics days away from homeport	45
Mission days	165
Days in homeport	135
Total days per year	365

The ambiguity between the narrative in paragraph 3.1.1.2. and Table 3 caused a misunderstanding about the number of underway days required in the specifications. However, the performance specification has always been for 185 days underway (165 mission days + 20 transit days). A modification was issued to remove ambiguity and not for the purpose of reducing performance requirements. The modification will show the requirement as 230 DAFHP/185 days underway. By comparison, current Coast Guard high-endurance cutters are programmed for 185 DAFHP/135 days underway.

Question 9. Was this decision to "redefine" the contract's performance requirement unique to the National Security Cutter? Didn't the Coast Guard do pretty much the

same thing with the performance specification for the 123-foot vessel conversion? In fact, didn't the Coast Guard alter the standard after the MATAGORDA (the first 123-foot vessel) didn't meet the original contract performance requirements?

Answer. As discussed in previous responses, the Coast Guard did not redefine contract performance requirements for the NSC. For the 123-foot WPB, the Coast Guard approved four revisions to the performance specification that primarily addressed concept of operations conflicts with the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C^4ISR) capabilities. All revisions to the specification occurred prior to the CGC MATAGORDA (WPB 1303) buckling incident.

Question 10. Admiral, this tells me that the Coast Guard is letting the industry contractor off the hook because it could not meet its own promises of performance. Why would you want to do that? Doesn't that mean that the Coast Guard and the taxpayer will cover for industry's mistakes?

Answer. As discussed in previous responses, the Coast Guard has not reduced performance requirements. Rather, there was an ambiguity in the performance specification for the NSC. One section specified 230 days underway without elaboration, while a table in the specifications in another section correctly listed the details regarding the 230 days. The table showed the following:

Transit days—vessel is underway	20
Logistics days away from home port (at pier or anchored and not underway)	45
Mission days—vessel is underway	165
Days away from home port	230

The performance specification has not been changed; it has been clarified to avoid any future misunderstandings.

Question 11. Why did the Coast Guard ignore the concerns of its own engineering experts and decide to go ahead with construction of the National Security Cutter?

Answer. The Coast Guard did not ignore the concerns of its engineering experts prior to awarding the NSC 1 Production DTO 0030BC on 22 June 2004. In fact, throughout the preliminary, contract, and detail design phases the Coast Guard required ICGS to re-examine many of the design details that resulted in numerous improvements to Longitudinal Bulkhead, Side Shell and Superstructure, and the 01 Level Strength Deck. The Coast Guard's Assistant Commandant for Engineering & Logistics Resources (CG–4) structural concerns regarding Strength Deck Stringer Plates, Superstructure Re-entrant Design, Shell Fashion Plates, Hangar Racking Strength, Hole Control, 01 Knuckle, and Reduction Gear Structure required additional analytical study in order to understand them and determine any necessary design changes. Having weighed the cost, schedule, and performance risks, the Program Executive Officer (PEO) elected to award DTO 0030BC while pursuing a parallel path of conducting an independent assessment of the CG–4 concerns. It is important to note that these engineering experts filled billets and positions established by Deepwater to accomplish these types of reviews.

In March 2005, the Coast Guard, using Deepwater funds, commissioned Naval Surface Warfare Center—Carderock Division (NSWC–CD) to perform an assessment of the National Security Cutter's (NSC) structural design and fatigue-life. The USCG maintained close communication with NSWC–CD throughout the duration of the study and received several progress reports in the form of round table technical briefings. It was not until December 2005 that NSWC–CD, in a preliminary report, advised the Coast Guard that they had determined a fatigue problem. NSWC–CD's final report was delivered to the Coast Guard in October 2006 after going through NSWC–CD's quality review process.

Based on fatigue load model updates performed by NSWC–CD, finite element models established by NSWC plus reviews and inputs from structural experts from the CG–4 Engineering and Logistics Center (ELC), maximum permissible stress levels for the NSC were developed. The Coast Guard and ICGS developed a technical solution to structurally enhance NSC 3–8 prior to production award based on those maximum permissible stress levels. ICGS provided the Coast Guard with a cost proposal based on the technical data on 22 February 2007. The proposal is currently under review and will be negotiated in conjunction with the award of NSC 3. The Coast Guard is continuing to analyze and develop solutions to make modifications to NSC 1 and 2 after delivery well before fatigue-life becomes an issue.

If the Coast Guard had elected to not award DTO 0030BC in June 2004 in lieu of mitigating all structural concerns, and given the fact that it took approximately 2 years in analyzing and developing structural enhancement solutions, then produc-

tion of NSC 1 would have been delayed significantly with compounding impacts to cost and subsequent NSC construction schedules. During those 2 years, the 378 WHECs, which will be replaced by the NSCs, continued to experience maintenance problems and a loss of underway days. In order to ensure continued capabilities to meet maritime missions, the best approach for the Coast Guard was to continue NSC construction while the final structural enhancements were being designed.

Question 12. The IG's report says that the Coast Guard determined that it would be more costly to delay construction than to address design concerns early in the process. Is there any documentation that this is true?

Answer. No formal Business Case Analysis was performed to quantify the cost in delaying construction. Although structural concerns with the National Security Cutter (NSC) design were identified in the Integrated Product Team (IPT) process, the Program Executive Officer (PEO) decided that the large cost in delaying production outweighed the potential cost impact of delaying the remaining technical modifications until later hull production and retrofitting the initial hulls as needed. The decision to award DTO 0030BC was thoroughly and appropriately documented in detail by two decision memoranda (one by the Agency Acquisition Executive for baseline change items and the other by the Deepwater PEO addressing all other considerations).

Additional documentation leading up to the DTO award decision includes: (1) the briefing documenting the findings of the DTO Readiness Review (a decision meeting conducted by the NSC IPT); (2) two briefings by the Integrated Deepwater System Contracting Officer to the PEO providing a list of the risk items that must be cleared prior to the DTO award; and (3) a series of IPT minutes, that document the IPT tracked Critical Design Review Exit Criteria, including risk items that had to be resolved prior to award of DTO 0030BC. These minutes included structural issues carried by the IPT as a risk management item. None of the recommendations in these documents contradicted the PEO's decision. The following structural enhancements were incorporated in the NSC design before production began on NSC 1.

- Redesigned inner bottom structure beneath reduction gear.
- Removed superstructure expansion joint
- Reduced size of 01 deck penetrations and increased thickness of surrounding insert plate
- Installed superstructure fashion plates
- Installed Hovgaard bulkheads

Question 13. Since the Deepwater contract was signed in June 2002, the combined cost of NSC 1 and 2 has increased from $517 million to approximately $775 million. But this figure does not yet include costs due to production delays, costs due to Hurricane Katrina, or costs for needed modifications to the NSC design. I understand the combined cost of NSC 1 and 2 could be $1 billion or more. Is that true? $500 million more than the original cost?

Who will pay for these costs increases? What is the Coast Guard doing to recoup costs?

Who will bear the cost for needed design changes to both the NSC 3 through 8 that are not yet constructed?

Answer. The amount of $517.0M used in the 2002 contract for the first two NSCs did not include post-9/11 requirements changes, inflation from 2002 to 2007, or hurricane impacts. The below table summarizes our current cost estimates for NSCs 1 and 2 based on all project needs:

National Security Cutter (NSC) Budget Change Data Summary

[dollars in millions]

	NSC 1	NSC 2	Total
Preliminary & Contract Design	$7.3		$7.3
Detailed Design	$60.4		$60.4
Long Lead Time Materials	$74.4	$51.9	$126.3
Contract Production Budget	$180.1	$142.7	$322.8

National Security Cutter (NSC) Budget Change Data Summary—Continued

[dollars in millions]

	NSC 1	NSC 2	Total
June 2002 Contract Price in 2002 Dollars (A)			$516.8
Subtotal of Post-9/11 Changes, Engineering Change Proposals, and Government Items in 2002 Dollars not in June 2002 Contract Price (B)			$261.0
Assumed 1.85 percent Inflation from 2002 to 2006 (C)			$59.2
Hurricane Katrina Amounts in 2006 Dollars (D)			$123.0
Updated Total			$960.0

Notes:
(A) Only represents Contract Costs with ICGS.
(B) ICGS Costs Plus CG Post-9/11 Changes necessitated by the Homeland Security Act and Government Equipment and items such as Testing/Evaluation, and Engineering Changes.
(C) Assumption based on guidance provided by OMB.
(D) Congress funded an additional $123M in FY 2006 for hurricane-related costs for the NSC 1 and the NSC 2.

The change in the amount of funding required is the responsibility of the Coast Guard for Post-9/11 Changes, government items, associated inflation impacts and hurricane damage. All of the Engineering Change Proposals except for the structural upgrades are related to the Post-9/11 Changes. The exact cost of these changes will be determined after negotiations. The Coast Guard has determined that the NSC structural upgrade is not within the existing statement of work/specifications and has therefore issued a change to the NSC 3 solicitation in order to obtain a cost proposal that will subsequently require negotiation. If appropriate, a similar change will be made, either through ICGS or after delivery of the ships, to implement the structural modifications on NSC 1 and 2. For NSC 1 and 2, the structural changes will be incorporated through a change to existing contract terms or a new ship modification contract.

For NSC 3 and future ships the cost for necessary structural modifications will be incorporated into a new contract agreement.

Question 14. Why was Northrop Grumman going ahead with ordering lead materials and taking other steps for construction when the NSC designs had not even been approved by the Coast Guard? It sounds to me like Northrop already had the Coast Guard locked in to buying a questionable design.

Answer. Although Long Lead Time Material (LLTM) is normally ordered after Critical Design Review (CDR) (03 June 2003), the Deepwater Program Office elected to award LLTM on 19 March 2003 upon completion of Preliminary Design Review (PDR) (11 March 2003). Due to the limited availability of shipboard equipment/systems and the limited pool of suppliers, it is common for shipyards to require more than 12 months for LLTM orders. With what appeared at the time to be minimal risk in the design changing from PDR to CDR, the Deepwater Program Office elected to award LLTM to preserve schedule. All materials from all LLTM orders prior to CDR are usable, even with structural upgrades.

Question 15. Why does the Coast Guard plan to take delivery of the National Security Cutters 1 and 2 even though they have design flaws?

Answer. The Coast Guard does not intend to take delivery of NSC 1 or NSC 2 until each cutter has completed Acceptance Trials and ICGS has demonstrated that each cutter meets the specified Performance Requirements. Any structural modifications on NSC 1 and NSC 2 will largely be completed during each of the cutters' post-delivery yard availabilities. Both cutters will be fully capable of all mission requirements and are expected to meet performance specifications throughout their expected service life.

Question 16. Isn't there a chance that the problems with the first National Security Cutter could require repairs sooner than at regularly-scheduled maintenance (5 years time)? Wouldn't losing the NSC for the length of time needed to make repairs impose an additional strain on the Coast Guard's urgent national security mission?

Answer. The Deepwater Program Office and the Coast Guard Technical Authority (the Assistant Commandant for Engineering and Logistics Resources (CG–4)) are currently developing structural enhancement retrofit solutions to be incorporated during planned, post shakedown maintenance availabilities for NSC 1 and NSC 2. The first maintenance availability (approx. 3 nths in duration), scheduled to com-

mence 12 months after delivery, has been incorporated into the Pacific Area's operational planning factors. CG–4 is developing incremental technical work packages that address specific areas of concern as related to expected fatigue/service life. Those specific areas with critical fatigue/service concerns will be incorporated into the first maintenance availability. Follow-on structural modifications (as dictated by projected fatigue-life) will be incorporated into subsequent, planned maintenance availabilities.

Question 17. Who will pay for the needed repairs to both the NSC 1 and 2 and the design changes for the 6 others not yet constructed? What is the Coast Guard doing to recoup costs?

Answer. For National Security Cutters (NSC) 1 and 2, the structural changes will require the Coast Guard to issue a change to existing contract terms (or to issue a new ship modification contract). For NSC 3 and future ships, the cost for necessary structural modifications, will be incorporated into a new contract agreement.

Question 18. I understand Northrop's warranty for the National Security Cutter is only for 1 year after delivery. I understand that typically the Coast Guard would be doing tests and getting the ship prepared for service during that time, but that it will not be in actual operation by the end of that year. Given the newness of the designs that Northrop is using for these cutters, doesn't this mean that the Coast Guard and the American taxpayer are essentially funding industry R&D?

Answer. Although the NSC Performance Specification is unique in kind, NGSS is applying existing shipbuilding standards and proven technologies in the design and construction of the NSC. The 1-year warranty period is typical for newly constructed naval combatants and is similar to those employed by the Navy's Supervisor of Shipping (SUPSHIPS) at this and similar shipyards.

Question 19. The two controls on the performance of ICGS were to be: (1) total ownership costs, and (2) operational effectiveness. Has the ICGS met either of these with respect to the major vessels being delivered?

Answer. Total Ownership Cost and Operational Effectiveness of each surface asset cannot be quantitatively measured or realized until respective assets have been delivered and observed in service. The NSC will be evaluated during Operational Test and Evaluation and during normal operations throughout its service life.

Question 20. Admiral, the testimony of Mr. Teel who we will hear from shortly seems to suggest that there is nothing wrong with their design for the FRC. Do you agree with that assessment, and if not, why? How could there be such a fundamental difference of opinion on whether the design meets Coast Guard's needs?

Answer. The Coast Guard identified high technical risks with the Integrated Coast Guard Systems' (ICGS) proposed composite design that led to suspension of the composite Fast Response Cutter (FRC) design efforts on 27 February 2006. These risks were validated by an Independent Third-Party Design Review conducted by Alion—John J. McMullen & Associates (JJMA) that was completed on 10 April 2006 and by a panel of independent composite technology experts from the U.S. Navy, private industry, academia, and the U.S. Coast Guard who participated in a Technology Readiness Assessment of the FRC–A composite in December 2006. These technical risks would impact the manufacture of the composite hull and had the potential to impact cost and schedule.

Question 21. You allowed ICGS to award the design of the FRC to itself, when Northrop Grumman had no experience with designing such vessels. Now, years later, you have decided to issue a call for competitive proposals to design and build a shorter-term replacement for the FRC. Why did you agree to allow Northrop to design this vessel in the first place? And shouldn't you also be considering either off-the-shelf designs or a full competition for the longer-term FRC?

Who is responsible for the costs of changing the design for the longer-term vessel?

Answer. Under the overarching Integrated Deepwater System contract, the current design related Delivery Task Orders (DTOs) for the FRC (which has now been designated as FRC–A Class) was based on a composite hull form and was awarded to ICGS as the prime Deepwater contractor. ICGS in turn subcontracted with Northrop Grumman Ship Systems and Lockheed Martin. At the time of award, the Coast Guard did not anticipate experiencing the degree of technical risk that led to the suspension of design efforts on 27 February 2006. Within the DTO description, specification, work statement, and terms/conditions, the Coast Guard neither directed nor prohibited ICGS from hiring or subcontracting with patrol boat design agents. At the time of the FRC–A Class DTO, there was no reason to prohibit ICGS from subcontracting directly to Northrop Grumman Ship Systems.

The Coast Guard intends to compete all future design and construction of the FRC–B Class patrol boats as a Coast Guard procurement. The Coast Guard also re-

mains open to considering a parent craft (off-the-shelf design) patrol boat in our FRC–A Class acquisition strategy.

Question 22. I am very concerned that the Coast Guard's Deepwater office may have hired former Coast Guard staff who joined industry firms before the appropriate time had passed. Can I be confident that all ethics rules were followed?

Answer. The question suggests that the Coast Guard hires support contractor employees directly. Support contractor employees are hired by and work for support contractors, not the Coast Guard. All hiring decisions in these cases are made by support contractors, not the Coast Guard.

Transitioning and transitioned Coast Guard personnel are personally responsible for complying with all post-government-service-employment ethics rules. Coast Guard attorneys are made available to provide ethics guidance to all transitioning and transitioned personnel to help ensure that those personnel comply with the ethics rules. The Coast Guard does this through one-on-one sessions, group seminars and online training.

The Coast Guard takes prompt and appropriate action when it has reason to conclude that a transitioning or transitioned person is about to, or has, violated any relevant ethics rule.

Question 23. I must admit that I am also concerned with the lack of transparency and quite frankly, honesty, in Coast Guard's dealings with Congress on these issues. Just last year in our hearing on the Coast Guard's budget, you told me that you had walked on the first National Security Cutter from stem to stern and that all was fine with this ship. In fact, you already knew then that there were concerns regarding its design. Now, here we are at this hearing. I think you would agree that we need more open and frequent communications from the Coast Guard on Deepwater? And that this would help, not hurt, the Coast Guard and the likelihood that this program will be a success? Can I rely on you to provide more frequent and open information about Deepwater going forward?

Answer. I agree that we need more open and frequent communication, and believe that such communication will benefit the overall success of the Deepwater Program as we move forward. The Deepwater Program Office is prepared to provide monthly briefings on all surface/system assets similar to the regularly scheduled monthly briefings being provided to the House and Senate Appropriations Committee staffs on the patrol boat replacement effort and development of the FRC. We value the oversight the Congress provides and will expeditiously respond to any requests for additional Deepwater Program information.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUYE TO ADMIRAL THAD W. ALLEN

Question 1. Admiral Allen, I am one of the Coast Guard's strongest supporters, and have long supported the Deepwater program. However, the list of problems with the conversion of major vessels and other assets under the contract raise concerns that there are fundamental problems with the entire Deepwater program. Do you think the individual issues that have occurred are merely isolated incidents, or are they indicative of more serious problems?

Answer. The structural issues experienced on the 110′ to 123′ conversion are considered to be isolated within the 123′ Conversion Program. However, to increase the assurance that follow-on Deepwater surface assets are properly designed and constructed to an integrated and comprehensive set of standards, the Coast Guard intends to expand the role that the American Bureau of Shipping (ABS) will play in the Deepwater Program. Additionally, the Coast Guard is installing additional engineering rigor and oversight in the development of Deepwater Designs by way of:

- Requiring Contractor to incorporate and to provide coarse-mesh and fine-mesh finite element models as Contract Data Deliverables in the design of subsequent assets.
- Requiring Contractor to obtain consent to subcontract with future design agents.
- Conducting Technology Readiness Assessments of future surface assets before awarding Design DTOs.
- Increasing application of Independent Third-Party Review and Analyses.
- Formalizing the role of the Coast Guard's Chief Engineer and Technical Authority.

Question 2. At this point, all possible solutions to getting this program back on track should be considered. I know you are working on important internal manage-

ment reforms. What is your plan to address the other problems identified and get the program moving in the right direction?

Answer. Sir, I believe the changes that I have made will get the Deepwater Program moving in the right direction. They include:

- Moving Deepwater acquisition staff and resources to the Acquisition Directorate to form one Acquisition Shop to increase efficiency and improve processes.
- Designating the Assistant Commandant for Engineering and Logistics Resources (CG–4) as the Coast Guard's technical authority for all new ship acquisition designs.
- Adding staff on the government side to the Deepwater Program to perform greater contractor oversight and assume some of the system integrator duties.

Initiate a Business Case Analysis for all new acquisition decisions to ensure we are building and buying the right tools for our Coast Guard men and women at the best value to the government.

Question 3. Admiral, at our budget hearing last June, I asked you if there were any projects besides the Fast Response Cutter within the Deepwater Program that were experiencing problems, and made a specific mention of the National Security Cutter. While your answer mentioned some cost increases, it did not mention any other problems. However, the DHS Inspector General's report on the National Security Cutter indicates that design flaws were an issue prior to that time. At what point were you made aware of the problems highlighted by the DHS IG?

Answer. To clarify my testimony, on 14 June 2006 I stated "There are some technical issues associated with the construction that we will address in subsequent hulls." Regarding the fatigue-life of the NSC, the Deepwater PEO informed me in March of 2005 that he was tasking Naval Surface Warfare Center, Carderock Division to perform an independent analysis of the NSC to address the Assistant Commandant for Engineering & Logistic Resources (CG–4) concerns regarding the structural adequacy and fatigue-life of NSC critical areas. On 5 September 2005 I was deployed to the Gulf Coast as the Principal Federal Official for Hurricanes Katrina and Rita. I did not resume my duties as Chief of Staff until February 2006. At that time I was made aware that the DHS Inspector General was concluding the audit.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO ADMIRAL THAD W. ALLEN

Question 1. I believe the Coast Guard should drop its contractors, solicit new contractors through an open and competitive bidding process, and assert firm control over every important managerial decision. Do you agree? If not, what is the alternative?

Answer. I agree that the Coast Guard must assert firm control over critical management decisions and that is why I have made several critical changes that will ensure the Coast Guard is the decisionmaker. For Deepwater, this includes the use of Business Case Analyses (BCA) for all major acquisition decisions, use of third-party analysis, incorporation of relevant GAO and IG audit recommendations, elevating the role of the Coast Guard technical authority, reorganizing the Integrated Product Teams (IPT) to be led by qualified Coast Guard personnel and adoption of the "*Coast Guard Blueprint for Acquisition Reform*" as a framework for a new model acquisition organization.

The Short Range Prosecutor (SRP) is an example of where a BCA suggested going outside Integrated Coast Guard Systems (ICGS) as the preferred alternative. I will hold ICGS accountable for making sure that awards are based on best value source selection. If ICGS is unable to satisfy this requirement, I will turn to other procurement alternatives that can result in awards based on best value source selection.

Question 2. Do you believe that Lockheed and Northrop made management and purchasing decisions that increased their bottom line at the expense of efficiency and concern for the taxpayer?

Answer. The Coast Guard is not privy to the information that motivated the business decisions of either Lockheed or Northrop; thus, the Coast Guard is unable to answer the question asked.

Question 3. Do you believe that the delays and management problems with Deepwater have compromised national security?

Answer. The delays and problems experienced with delivered assets such as the 123′ cutter modifications have affected the Coast Guard's ability to reduce the gap in patrol boat mission hours but our national security has not been compromised. As evidenced in our response to Hurricane Katrina, the Coast Guard has an inher-

ent ability to reallocate resources in a short time to respond to significant events and will continue to perform in this manner even as we recapitalize our cutters and aircraft.

Question 4. Does the Deepwater contract allow the government to recoup funds stemming from design flaws for the cutters and patrol boats that will have to be fixed? Who pays for that?

Answer. In general, the contractor is responsible for performing according to the requirements of the contract and the Government is required to deal fairly with the contractor. If the contractor is at fault for defects or other failure of the product to perform adequately, the Government can demand correction at no cost, have the correction performed by a different contractor and charge the current contractor. The Government can also demand a price reduction; and, in extreme circumstances, a termination for default is warranted. The Deepwater Contract conforms to all contracting principles in accordance with the Federal Acquisition Regulations (FAR).

Question 5. In 2004, the GAO issued its 11 recommendations on how to improve Deepwater. One was to study whether a traditional contract or multiple contracts would cost less then the systems integrator contract approach you currently use. In spite of all the cost overruns and delays and negative media, the Coast Guard has refused to do it. Why hasn't the Coast Guard implemented GAO's recommendation to study alternative contract arrangements?

Answer. The Coast Guard has studied alternative contract arrangements. The Coast Guard has the ability to look to other sources for any part of the Deepwater mix of assets and capabilities. On March 14, 2007, ADM Allen signed a decision memorandum approving the termination of the current FRC–B (replacement patrol boat) acquisition with ICGS and reassigning it to the Coast Guard's acquisition Directorate. This action will ensure full and open competition, enable us to acquire a patrol boat that is more capable, help to control costs, and deliver replacement patrol boats in the shortest time possible.

- This decision is based on the Coast Guard's ongoing commitment to improving program management to achieve best value for taxpayers and the government.
- Schedule impacts will be managed by combining the design and production phases into one effort.
- The Coast Guard expect to release the Request for Proposal (RFP) for this plan in May 2007.

Question 5a. Isn't it essential that the Coast Guard drop the Systems Integrator concept, whether or not it drops Lockheed and Northrop?

Answer. As announced by ADM Allen on April 17, 2007, the Coast Guard is assuming a greater oversight and management role in the Deepwater Program.

Question 5b. Don't you think the time has come to at least study my recommendation that you drop the current contract and issue a new one?

Answer. Prior audits and studies conducted by various entities such as GAO, and the National Defense University (NDU) have provided feedback on the "system of systems" acquisition strategy and found it to be a valid contracting mechanism when adequate program and technical oversight is applied. The management changes that Coast Guard is currently adopting will improve the Deepwater Program and be more cost effective and deliver much needed tools more quickly to the men and women of the Coast Guard than would occur if the current contract were dropped and a new contract issued. The initial Deepwater Program took 6 years to go from approval of the Mission Needs Statement to contract award in 2002. It took an additional four to 6 years for major capital assets like the National Security Cutter and the Maritime Patrol Aircraft to be close to delivery or to have been actually delivered.

Question 6. Many of the problems with Deepwater stem from the unusual contract between the Coast Guard and its contractors that empowered them to make management decisions as well as poor oversight and decisionmaking from your managers and engineers. These problems have been documented for at least 5 years, and are deeply troubling.

For instance, a 2004 internal Coast Guard memo from Rear Admiral Erroll Brown to Rear Admiral P.M. Stillman which outlines Admiral Brown's concerns regarding design flaws for the National Security Cutters seems to have been completely ignored. Admiral Brown outlined many of the structural flaws that we now know will cost an additional $500 million to fix, and stated that the contractors "ended any collaborative effort" to remedy them.

So, clearly, the Coast Guard has known for some time that the ineffective collaboration with its contractors is at the root of the problems we're discussing today.

Here's what I don't understand: Why did the Coast Guard decide, in May 2006, to extend the contract with Lockheed and Northrop for 43 months starting in June 2007 given what it knew at that point?

Answer. The Coast Guard's decision regarding the length of the award term was based upon an extensive Coast Guard review of the joint venture's performance during the first 42 months (June 2002–December 2005) of the base period. Based on the input from the Award Term Evaluation Board using pre-determined contractual criteria, the Award Term Determining Official made the period of performance determination which was 43 months. Many aspects of the program were considered, including the successful C^4ISR legacy cutter upgrades, the re-engined HH–65Cs, and the C–130J missionization project; along with the aspects of the program that were less successful. The fact that the contractor did not receive an award term of 60 months is a reflection that the Coast Guard wanted improved contractor performance. While the 43-month award provides an opportunity for improved performance, it does not obligate the Government to award any work to ICGS or to continue with the ICGS prime contract during the Award Term I period since the minimum requirements of the Indefinite Delivery/Indefinite Quantity contract were already met during the base period from 2002 to 2007.

Question 7. In your written testimony, you state: "The Coast Guard has been and remains fully involved in the management of this program and has made all final and critical decisions."

Let me contrast this with Mr. Skinner's written testimony. He says:

> "The Deepwater contract essentially empowered the contractor with authority for decisionmaking. Therefore, the Coast Guard was reluctant to exercise a sufficient degree of authority to influence the design and production of its own assets. Specifically, under the contract ICGS was the Systems Integrator and assigned full technical authority over all asset design and configuration decisions; while the Coast Guard's technical role was limited to that of an expert 'advisor.'"

Can you explain the discrepancy between your view of the program and Mr. Skinner's?

Answer. The Deepwater Acquisition Strategy assigned Integrated Coast Guard Systems (ICGS) responsibilities as the Systems Integrator, to develop an integrated system of assets, as well as C^4ISR and Logistics components, to meet the Coast Guard's requirements. This strategy was developed in a competitive environment and ICGS was awarded the contract in June 2002 over two other competing industry teams.

The Assistant Commandant for Engineering and Logistics Resources, the Coast Guard technical authority, has been and will continue to be fully involved in all asset design and configuration decisions. As one example, the National Security Cutter (NSC) Integrated Product Team, which included Coast Guard technical experts who were funded by Deepwater Program resources, was responsible for many design changes and improvements to the NSC structure well before the Coast Guard hired Naval Surface Warfare Center—Carderock Division to conduct a structural assessment of the NSC. The Coast Guard modified every DTO that was originally proposed by ICGS. Further, when the post-9/11 Mission Needs Statement changes were made for specific assets, adding new capabilities for and adjusting the quantity of each asset, ICGS did make an initial recommendation, but the final mix of assets was completely decided and justified to DHS in 2004 by the Coast Guard. However, I agree with Mr. Skinner that while the Coast Guard has always had this degree of authority, we were at times reluctant to use it, a situation I have remedied.

Question 8. One of the main problems with Deepwater that have been identified by the IG's office as well as GAO has been the Coast Guard's understaffed acquisition office. I know the Coast Guard is well aware of this. At a recent staff briefing Rear Admiral Gary Blore, who now heads the acquisition office, stated that the Coast Guard's oversight staff is only 20 percent of what the Department of Defense would employ on a similar sized contract.

Can you tell me how much progress you've made hiring acquisition staff, especially those with technical expertise?

Answer. The Deepwater Program Office and the Office of Acquisition have been authorized and funded for 36 new government positions for Fiscal Year 2007. We're currently recruiting these positions, which include program management, technical engineers, logisticians, business financial managers, and contracting specialties.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TRENT LOTT TO ADMIRAL THAD W. ALLEN

Question 1. Please explain the days underway and sea condition inputs for each Naval Surface Warfare Center Carderock Division's fatigue-life analysis conducted on the National Security Cutter (NSC).

Answer. NSWC Carderock Division's fatigue-life analysis was conducted using the computer program SPECTRA for which 6,900 days at sea was used as an assumption. This value was based on assuming 63 percent operability or 230 days underway per year over the course of a 30-year service life. (Note: NSWC–CD unilaterally chose to use 230 days underway. Their analysis was adjusted later by the Coast Guard technical authority to reflect the days underway referenced in the NSC Performance Specifications).

NSWC Carderock considered two operational areas for their analyses: Northern Pacific and General Atlantic. The sea condition assumptions were determined by: (1) established wave height probabilities for specific oceanographic areas, using Ochi (1976) six-parameter sea spectra; and (2) probabilities associated with time spent at specific headings and speeds for ranges of specific wave heights.

The wave height probability inputs for the General Atlantic were selected as a pre-programmed function of the SPECTRA software. The General Atlantic wave height probabilities are a combination of the Ochi North Atlantic with data from the Caribbean, Mediterranean, and Atlantic between the U.S. East Coast, and Spain, as is described in the March 2000 NSWC Carderock Report NSWCCD–65–TR–2000/07 March 2000, "User's Guide for SPECTRA: Version 8.3".

The wave height probability inputs for the Northern Pacific case were actually derived by numerically averaging the wave height probabilities associated with three buoy geographical positions (GP–12, GP–13, and GP–16) along the Gulf of Alaska, in accordance with values published in the October 1995 NSWC Carderock report NSWCCD–HD–1048–01, titled "Global Wave Statistics for Structural Design Assessments". The geographic location of the three buoy positions are portrayed in the following map.

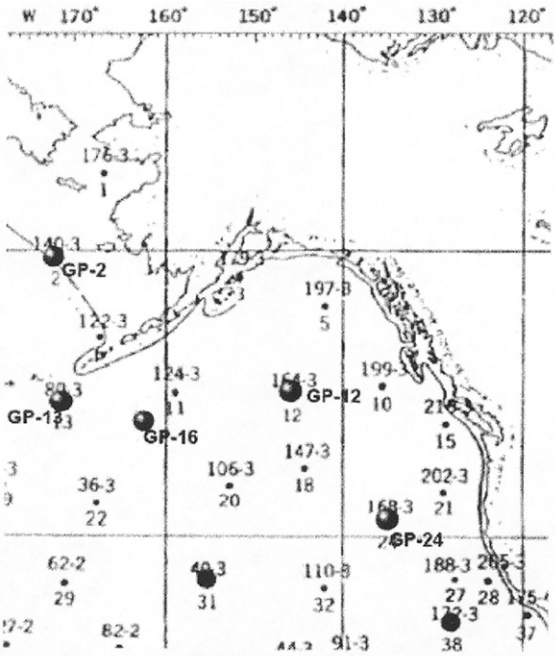

Figure 11. Wave Buoy Data used to Define North Pacific Wave Height Statistics

At Coast Guard request, NSWC–CD also conducted analyses of 170–180 days underway per year and less severe operating areas.

Question 2. Please describe how these inputs compare to the NSC concept of operations as initially developed and, if applicable, as modified.

Answer. The wave height probability assumption values used by Naval Surface Warfare Center Carderock Division (NSWC–CD) to prepare their published report include those values representative of the National Security Cutter (NSC) operating conditions and Concept of Operation (CONOP). NSWC–CD's Gulf of Alaska ("Northern Pacific") analysis represents operating the NSC *only* in the Gulf of Alaska in the worst or most severe conditions of the entire Northern Pacific Ocean. The "General Atlantic" conditions represent a combination of data from the Caribbean, Mediterranean, and Atlantic between the U.S. East Coast, and Spain. These conditions are less severe than sea state probabilities appropriate for design of the NSC class of ships.

In March 2006, the Coast Guard reviewed the current CONOPs for each of the 8 NSCs and determined that the NSCs to be homeported in Alameda, California will experience the most-severe sea conditions within the NSC fleet. Applying the same wave-height statistics used by NSWC–CD, CONOPs-derived wave height probabilities for the Alameda-based NSCs sea state probabilities were calculated by the Coast Guard for analyzing the NSC as a class of ships. The same professionals who authored the NSWC–CD report were engaged throughout this process to perform analyses from these inputs in order to derive outputs from their SPECTRA software, and to provide analytical advice.

Various scenarios for days underway per year were established by the Coast Guard for input by NSWC–CD to their SPECTRA software program. The scenarios were based on: (1) differing interpretations of Deepwater contract requirements (230, 207, and 185 days per year) and, subsequently, (2) on actual Coast Guard minimum requirements (170 days per year) as identified by the Coast Guard Technical authority:

> *"The analysis conducted by NSWC–CD used 230 days of operation in the North Pacific as an initial assumption and "bracketed" the operational profile by using 230 days in the General Atlantic as a less severe wave profile loading case. I agree with your assessment that designing the NSC to operate 230 days, on average, each year in the North Pacific would lead to an overly conservative design. Enclosure (1) is a spreadsheet that G–RCD developed to illustrate the NSC operational profile for application in subsequent fatigue-life analysis calculations. By applying the current post delivery OT&E activity schedule and some basic assumptions regarding scheduled and unscheduled availabilities, I conclude the NSC will operate, on average, between 170 to 180 days per year in the Pacific Ocean north of the Equator. I therefore recommend that no less than 170 days per year, on average, in the Pacific Ocean north of the Equator, with the associated and appropriate sea spectra, be used as the operational profile for fatigue design calculations."*

Question 3. Also, please describe how these inputs compare to the historical use of the Hamilton Class cutters that the NSC will replace and the standards used for Navy combatant ships.

Answer. Based on review of historical data between 1992 and 2005, HAMILTON Class cutters have averaged 129 operating days underway per year.

For 2004 and 2005, the Navy reported in the Navy Ship Operations Assessment that it actually had 287 ship years in 2004 and 252 ship years in 2005. In 2004 and 2005, these ships were underway for 418,707 and 453,998 total hours respectively. This amounts to 60.8 ship days underway per ship year for 2004 and 75.1 ship days underway per ship year for 2005 based on dividing total hours by 24. Based on their hours, naval combatants built for the Navy, unlike those built to be employed as Coast Guard Cutters, will be subjected to much less time underway. Because the Navy and the Coast Guard have different operational tempo, personnel tempo, and maintenance schedules, the average number of ship days underway for each ship in the Navy and the Coast Guard does not lend itself to a useful comparison.

Question 4. I understand that the Coast Guard, the Department of Homeland Security Science and Technology Directorate, and Northrup Grumman Ship Systems has discussed a plan to fund construction of an FRC–A composite hull demonstrator craft. Do you support construction of such a demonstrator?

If so, do the FY07 appropriation and FY08 request for the Deepwater program include adequate funding for the Coast Guard's share of such a plan?

Answer. The Department of Homeland Security (DHS), Office of Science and Technology has requested funding for the Composite Demonstrator Program in their FY 2008 budget. The Coast Guard does not currently have, nor is the Coast Guard requesting, funding in its budget to support this initiative. However, the demonstrator could potentially add value to Coast Guard efforts to validate the production readiness and total ownership cost of composite patrol boats, such as the FRC–A Class patrol boat.

Question 5. Please describe the Coast Guard's plans to house NSC commissioning crews during their temporary assignment to Pascagoula, MS.

Answer. The Coast Guard is currently exploring multiple options for housing NSC crews, including other military and commercial sources. We are performing market research to determine commercial availability of berthing in the Gulf Coast area, which is still subject to impact of hurricane reconstruction demand. The current plan for housing of the pre-commissioning crew of CGC BERTHOLF is for them to stay at a commercial lodging facility within a 30 mile radius of the shipyard in Pascagoula, MS.

Question 6. Do these plans include the use of Navy housing?

Answer. No. The Coast Guard investigated the availability of Navy housing within 30 miles of the shipyard for berthing National Security Cutter (NSC) crews. The Navy's Lakeside facility in Pascagoula, MS was initially approved, but because of schedule changes for Navy ships under construction in Pascagoula, the Navy facility no longer has space available for Coast Guard crews.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. OLYMPIA J. SNOWE TO ADMIRAL THAD W. ALLEN

Question 1. The independent analysis on the NSC is complete, and the Coast Guard has decided to incorporate the structural modifications recommended nearly 2 years ago. What are the final costs of these modifications and who will be responsible for the additional costs?

Answer. Many of the structural modifications recommended 2 years ago were incorporated into the design prior to awarding the NSC production contract, including numerous improvements to Longitudinal Bulkhead, Side Shell and Superstructure, and the 01 Level Strength Deck. Additional concerns regarding Strength Deck Stringer Plates, Superstructure Re-entrant Design, Shell Fashion Plates, Hangar Racking Strength, Hole Control, 01 Knuckle, and Reduction Gear Structure required additional analytical study in order to understand them and determine any necessary design changes. Integrated Coast Guard Systems (ICGS) has submitted a proposal to address this latter group, but the evaluation of the proposal and negotiations are not yet complete. The cost share associated with these modifications will not be known until negotiations have been conducted.

Question 2. In August 2006, the Coast Guard announced the length of the next Deepwater contract award term—43 months. According to the Coast Guard, the next milestone in the process is to negotiate the terms of the contract between the Coast Guard and ICGS. What would be the impact on the Coast Guard and the Nation of not renewing the contract with ICGS?

Considering the performance of the ICGS to date, what are other options available to the Coast Guard to recapitalize its aging fleet of vessels and aircraft? To what degree has the Coast Guard investigated these other options?

Answer. If the Coast Guard does not renew the contract with Integrated Coast Guard System (ICGS), then the Coast Guard would have to restart the procurement process for all Deepwater assets. For large complex procurements (such as the National Security Cutter), it could take approximately 3 years to award a contract, which means that aging legacy assets being replaced by new procurements, would have to remain in service much longer than planned. In addition, there may be more delays that a new contractor may experience in providing the new assets. The impact on the Nation is that the Coast Guard may not be able to provide its current level of services at present funding levels because more funding would go into less capable, maintenance intensive, high cost legacy assets, which would have to remain in service longer.

The Coast Guard has a great deal of flexibility in recapitalizing its aging fleet of vessels and aircraft. The Coast Guard met the minimum ordering quantities under the Indefinite Delivery-Indefinite Quantity contract early in the base period of the Deepwater contract and therefore is no longer obligated to purchase additional assets, systems, or services through ICGS. In fact, the Coast Guard has exercised this option when ICGS did not offer the best value to the Government. For example, in

July 2006, the Coast Guard decided to procure the cutter small boat (short range prosecutor) using full and open competition instead of using ICGS. On March 14, 2007, a similar decision was made to halt the replacement patrol boat (FRC–B) procurement with ICGS and instead to procure the 12 vessels using full and open competition.

Question 3. Several reports from the GAO raised concerns about the Coast Guard's oversight of the Deepwater contractors. The IG report concludes that the Deepwater contract does not require ICGS or its subcontractors to act upon the advice of the Coast Guard technical experts. What actions are you taking to improve the oversight of the Deepwater contractor?

Answer. The Coast Guard has made the following changes in order to improve Deepwater program management:

- Move Deepwater acquisition staff and resources to the Acquisition Directorate to increase efficiency and improve processes.
- Designate the Assistant Commandant for Engineering and Logistics Resources (CG–4) as the Coast Guard's technical authority for all new ship acquisition designs.
- Add staff on the government side to the Deepwater Program to perform greater contractor oversight and assume some of the system integrator duties.
- Initiate a business case analysis for new acquisition decisions to ensure we are building and buying the right tools for our Coast Guard men and women and obtaining the best value.
- Increase application of independent third-party review and analyses.

Fundamentally, all ICGS' (and its subcontractors') actions are based on contract documents which must be approved by government contracting officers. The enhanced role of the technical authority and the Coast Guard's ability to affect all industry actions through the contracts re-establishes government primacy on design—as demonstrated by the Coast Guard-directed National Security Cutter (NSC) structural enhancements and stop work of the original Fast Response Cutter (FRC).

Question 4. The Defense Acquisition University contends that reorganization is necessary but is not enough. What are your thoughts about moving away from the current structure of the Deepwater contract toward a more traditional full and open competition model?

Answer. The Coast Guard will use the traditional full and open competition model to procure Integrated Deepwater System assets when it makes sense to do so. This occurred very recently when the Coast Guard decided that the Fast Response Cutter "FRC–B" solution proposed by Integrated Coast Guard Systems was not the best value. The decision to use traditional full and open competition for the FRC–B was based on the Coast Guard's ongoing commitment to achieve the best value for taxpayers and the government.

Question 5. Does the Coast Guard need a systems integrator to recapitalize its fleet of legacy cutters and aircraft?

Answer. The goal of the Deepwater Program is not to simply recapitalize assets, but to create a Coast Guard system of surface and air assets with an integrated C^4ISR and logistics capability. At the time the Deepwater Program was conceived, systems integrator expertise was not an inherent core competency in the Coast Guard and it was determined that it would be most cost effective to acquire that expertise from industry. However, using lessons learned (and to improve management oversight of the contractor), beginning in the Fall of 2004 the Coast Guard took steps to reduce its reliance on Integrated Coast Guard Systems (ICGS). Currently, in parallel with the ongoing Office of Acquisition and Deepwater Program consolidation initiative, the Coast Guard will support systems integrator functions with existing resources allocated to various organizational components and augmented as needed with independent (third-party) contractors and other government entities in order to achieve the required competencies and capabilities. Continued support for the System Engineering and Integration (SE&I) budget request in the FY 2008 President's budget remains essential to the success of these efforts and initiatives.

Question 6. According to the IG report, the Coast Guard did not conduct a formal business case analysis before deciding to move forward on the NSC, and there was very little background or documentation to support the Coast Guard's reasons for moving forward. The Deepwater contract is judged on cost, schedule, and performance. But it appears that at least in the case of the National Security Cutter, the Coast Guard sacrificed performance, and possibly cost, to stay on schedule. When future design or systems issues arise, how will your proposed organizational

changes resolve the inevitable conflict between meeting cost, schedule, and performance?

Answer. The proposed acquisition organizational change will provide Coast Guard's operational, project, and functional chain of command with accurate and timely data and information needed to resolve cost, schedule, and performance conflicts. Future business case analyses, with third-party review, will develop proposed solutions, within the triple constraints of cost, schedule, and performance that best align with the Department of Homeland Security and Coast Guard priorities and fit tactical and strategic needs.

The following initiatives will directly benefit the Coast Guard's ability to address cost, schedule, and performance conflicts:

- Designating the Assistant Commandant for Engineering and Logistics Resources (CG–4) as the Coast Guard's technical authority for all new ship acquisition designs.
- Adding government staff to the Deepwater Program to perform greater contractor oversight and assume some of the system integrator duties.
- Initiating business case analyses for new acquisition decisions to ensure the Coast Guard is building and buying the right tools for the best price.

Question 7. The lack of Coast Guard acquisition personnel and experience has been a recurrent theme in Deepwater oversight issues. What is the Coast Guard doing to fill the staffing vacancies and bolster experience?

Answer. The Coast Guard is committed to maximizing use of available civilian recruitment and retention incentives, including Direct Hire Authority for selected civilian series, full utilization of the Superior Qualification policy, career entry-level opportunity positions, and enhanced use of other available hiring incentives to ensure a reduction in existing staff vacancies.

The Coast Guard has aggressively sought the assistance from experts in the field of acquisition to help address the issue of inexperienced personnel. The recent Defense Acquisition University (DAU) Deepwater Quick Look Study recommended changes in the Coast Guard's acquisition workforce management. Specifically, the study recommended a combination of human capital initiatives including recruitment of personnel with significant major systems acquisition experience and appropriate certification levels, training and mentoring of existing personnel, and establishment of policies and procedures that places acquisition excellence and development of business competencies at a level equivalent to the value the Coast Guard places on operational excellence and experience. As a result of this study, and other lessons learned following project execution, the Coast Guard developed the *Blueprint for Acquisition Reform*. As part of this blueprint, the Coast Guard will institute innovative approaches to indoctrinate and train the acquisition workforce. Training components will include mandatory entry-level training, tailored CG training, professional development seminars, mentorship programs, and recertification and training opportunities through DAU and the Federal Acquisition Institute. This approach will help to ensure professional growth and opportunities for acquisition certifications at all levels of the organization. In addition, the Coast Guard will ensure alignment of newly developed position descriptions with roles and responsibilities for new hires under the consolidated Deepwater/Acquisition (CG–9) organization to facilitate the selection process for hiring qualified acquisition personnel in contracting, program management, and other acquisition professions.

Question 8. What can Congress do to help in this effort?

Answer. The Coast Guard greatly appreciates Congressional support for the President's FY 2008 budget request.

Question 9. How will the transfer of acquisitions personnel to the OE appropriations as requested in the Coast Guard FY08 budget assist in these efforts?

Answer. The transfer of acquisition personnel to the OE appropriation will provide a broader pool of workforce available to assist in meeting acquisition deliverables. This will ensure operational assets are available in a timely manner to meet critical mission requirements. This transfer will also allow the Coast Guard additional flexibility, within the existing FTE caps, to make higher level prioritization of personnel resources, placing AC&I priority needs alongside OE priority needs.

Question 10. The IG reports there was considerable concern with the difficulties encountered trying to obtain access and information from the Coast Guard and ICGS. In its response, the Coast Guard stated that the Department is working to promulgate Department-wide guidance on dealing with the DHS Office of Inspector General. Has DHS addressed the concerns you raised about a Department-wide audit policy?

Has the Department promulgated a policy regarding internal audits?

Answer. Yes, DHS is working with the Coast Guard as well as other DHS Components to promulgate Department-wide policy on DHS OIG relations.

DHS current management directive addresses with OIG the following concerns:

- OIG procedures requiring Component heads to ensure that documents are promptly provided to the OIG and to assist in arranging interviews.
- DHS and Component audit liaisons assist OIG by arranging timely access to documents and officials, while minimizing operational impact.
- DHS employees "cooperate fully by disclosing complete and accurate information pertaining to matters under investigation or review."
- States that DHS employees shall "not conceal information or obstruct audits, inspections, investigations, or other official inquiries."

Question 11. In his testimony, Captain Jarvis said that as Deepwater assets were being developed, the Coast Guard ignored the opinions of some of its own engineers in favor of those from the industry-led Integrated Product Teams. Do you agree with his assessment? How did the Coast Guard reconcile differences between its own experts and industry experts?

Answer. The Coast Guard did not ignore the concerns of its engineering experts prior to awarding the National Security Cutter (NSC) 1 Production DTO on June 22, 2004. In fact, throughout the preliminary, contract, and detail design phases the Coast Guard required ICGS to re-examine many design details that resulted in numerous improvements to longitudinal bulkhead, side shell, and superstructure, and the 01 level strength deck. The Assistant Commandant for Engineering and Logistics Resources (CG–4) identified structural concerns regarding strength deck stringer plates, superstructure re-entrant design, shell fashion plates, hangar racking strength, hole control, 01 knuckle, and reduction gear structure that required additional analytical study to understand them and determine if design changes were necessary. Having considered the cost, schedule, and performance risks, the PEO elected to award the NSC 1 Production DTO while pursuing a parallel path of conducting an independent assessment of the CG–4 concerns.

In March 2005, Deepwater Program funds were used for Naval Surface Warfare Center—Carderock Division (NSWC–CD) to perform an assessment of the NSC's structural design and fatigue-life. The Coast Guard maintained close communication with NSWC–CD throughout the study and received several progress reports in the form of round table technical briefings. It was not until December 2005 that NSWC–CD, in a preliminary report, advised the Coast Guard that they had detected a fatigue-life problem. NSWC–CD's final report was delivered to the Coast Guard in October 2006.

Based on fatigue-load model updates performed by NSWC–CD, finite element models established by NSWC–CD, plus reviews and input from structural experts from the CG–4 Engineering and Logistics Center (ELC), maximum permissible stress levels for the NSC were developed. The Coast Guard and Integrated Coast Guard Systems (ICGS) developed a technical solution to structurally enhance NSC's 3–8 prior to production award based on those maximum permissible stress levels.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DAVID VITTER TO ADMIRAL THAD W. ALLEN

Question 1. What percentage of the current Deepwater mission is covered by the 110′ patrol craft? Can you describe the tempo under which these boats have been operating and their performance?

Answer. The stateside 110′ WPBs contribute 30 percent of the total performed Deepwater patrol hours in 2006. If the Operation Iraqi Freedom vessels are also included in total patrol boat hours then the 110′ WPB fleet contributed 38 percent of the total performed patrol hours in 2006. However, the percentage of hours performed is not equivalent to the percentage of the Deepwater mission. The 110′ WPB platform is not ideal for execution of all missions. While a capable interceptor and pursuit vessel the 110′ WPB is limited in communications, range, endurance, and small boat launch capability.

For patrol boats, the Coast Guard defines operational tempo as programmed patrol hours. Within the 110′ WPB fleet, there are three optempo levels: stateside without a designated Maintenance Augmentation Team (MAT), stateside with a designated MAT, and those that operate in support of Operation Iraqi Freedom. Programmed optempo ceilings/targets for these vessels are:

- Stateside without dedicated MAT support—1,800 hours/year

- Stateside with dedicated MAT support—2,200 hours/year
- In support of Iraqi Freedom—no programmed hour ceiling*

The percent completion of programmed hours is a good general assessment of 110′ patrol boat performance. On average in 2006, stateside 110′ WPBs achieved 91.4 percent of their combined 69,300 programmed hours.

Question 2. I mentioned this issue at the hearing, but you said that you needed to reply for the record. Were you or other senior leadership of the Coast Guard made aware of a proposal from years ago to provide a new hull, instead of only partially repairs to the hull, for the 110′ to 123′ conversion for $1 million more per copy?

Answer. The Coast Guard was aware of one informal presentation by Bollinger Shipyard, Inc. (BSI) to Vice Admiral Peterman (then RADM Peterman, Seventh Coast Guard District Commander) in August 2004. Additionally, Integrated Coast Guard Systems (ICGS) made an informal presentation to the then-Commandant (ADM Collins) in September 2004. Both of these informal presentations involved completely replacing the metal hull of the 123′ instead of only replacing a portion of the hull. The Coast Guard did a preliminary review based on the very limited information presented, but was hindered by a lack of information on the engineering approach, including no written cost information (only verbal estimates were provided).

Based on that situation, the Coast Guard verbally responded that the risk of so many unknowns did not allow the Coast Guard to make any decision on the value of this approach. BSI and ICGS were advised that if this approach truly had merit, then an "Unsolicited Proposal" in accordance with the Federal Acquisition Regulations should be sent to the Coast Guard. Neither firm submitted an "Unsolicited Proposal."

Question 3. What factors caused the Coast Guard to not accept this proposal?

Answer. The Coast Guard did a preliminary review based on the very limited information presented. The preliminary review was hindered by a lack of information on the engineering approach, including no written cost information (only verbal cost estimates were provided).

Based on that situation, the Coast Guard verbally responded that the risk of so many unknowns did not allow the Coast Guard to make any decision on the value of this approach. Bollinger Shipyards, Inc. and Integrated Coast Guard Systems were advised that if this approach truly had merit, then an "Unsolicited Proposal" in accordance with the Federal Acquisition Regulations should be sent to the Coast Guard. Neither firm submitted an "Unsolicited Proposal."

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO RICHARD L. SKINNER

Question 1. Do the findings of the Defense Acquisition University confirm the findings of your various studies that there are some recurring, programmatic problems with Deepwater that are bigger than problems with specific assets?

Answer. Yes

Question 2. Can you explain why your office concluded that the NSC was required to meet a performance standard of 230 days underway, and why there seems to be so much disagreement about this finding?

Answer. Interviews with Coast Guard contracting personnel and subject matter experts and independent contractors (*i.e.,* Silski, Scott, and the U.S. Navy's Surface Warfare Center—Carderock) all told us that the understanding of everyone involved was the 230 day underway at sea versus the Days Away From Home Port (DAFHP) standard as is now claimed by the Coast Guard. It should be noted that our interviews were conducted with CG personnel that were involved with the drafting of the original performance standard. It should also be noted that the DAFHP standard is a crew management standard—not a cutter performance standard. The Coast Guard has yet to provide documentary evidence to support their DAFHP contention. The Coast Guard, in amending the Deepwater contract to reflect the lower 185 days underway standard, gave away an important and valuable capability that will negatively affect the operational capability of the NSC and the OPC.

Question 3. Isn't it more than just a little troubling that the Coast Guard is reinterpreting the contract's requirements? What are the implications of this?

**Note:* 110′ WPBs operating in support of Iraqi Freedom average 3,683 hours annually per hull.

Answer. Defining the standard to what an asset can do rather than what the Coast Guard needs the asset to do is a disturbing trend within the Deepwater Program, which needs to end.

Question 4. The NSC report has virtually no information about ICGS. Why is that?

Answer. Our NSC report documented the difficulty we had obtaining access to contractor personnel and information. It was because of this problem that we recommended the Coast Guard amend the Deepwater contract to allow the OIG unfettered access to all contract personnel, documents, and information associated with the Deepwater contract.

Question 5. Mr. Skinner, the report from your office describes significant problems with access to Coast Guard documents and personnel during the investigation. I understand from staff discussions with your office that the problems arose when your staff sought to talk to the Coast Guard's Engineering and Logistics Center—the Coast Guards own expert engineers. Is this the case?

Answer. That is correct. In fact, these access issues caused the NSC to shut down its audit for a period of 5 weeks while we negotiated an agreement to have unfettered access to ELC personnel. Since then, we have made a concerted effort to convince the Coast Guard and the Department to enforce the IG Act of 1978 and DHS MD 0810.1 which clearly provide the OIG with the authority to have unfettered access to Department personnel including those employed or contracted by the Coast Guard. I would also point out that similar access issues have been encountered with TSA, CBP, and ICE. Once again, it was because of these types of access issues that we recommended the Department require all contracts within the Department to include a clause which clearly allows the OIG unfettered access to all DHS contract personnel, documents, and information, including the Deepwater contract.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUYE TO RICHARD L. SKINNER

Question 1. Mr. Skinner, in conducting the audits on the National Security Cutter, the C^4ISR systems, and the 110-foot conversion project, what were some of the more systemic, broad problems that you found with the Deepwater program and its management?

Answer. Some of the systemic problems identified with the Deepwater contract include:

- Coast Guard's failure to exercise an appropriate level of technical oversight over the Deepwater contract.
- Coast Guard's willingness to amend asset performance requirements to meet asset capabilities rather than Coast Guard mission needs.
- Coast Guard's failure to develop and document the business case underlying key Deepwater decisions including the decision to go ahead with NSC production against the written advice of the Coast Guard's subject matter experts.
- NSC and 123′ Performance requirements that were ill-defined.
- Contractor willingness to install equipment and systems that do not meet minimum contract requirements.
- Coast Guard's willingness to issue waivers for critical equipment and C^4ISR system installations (*i.e.,* installation of low smoke cables and the installation of topside navigation and communications equipment) with the knowledge that the equipment/systems did not meet minimum contract performance requirements.
- Self-certification instead of using an independent third party.
- Although Coast Guard officials are involved in high-level Deepwater IT requirements definition processes, they have limited influence over contractor decisions toward meeting these requirements.
- A lack of discipline in IT requirements change management processes provides little assurance that the requirements remain up-to-date or effective in meeting program goals.
- Certification and accreditation of Deepwater C^4ISR equipment has been difficult to achieve.
- Due to limited oversight as well as unclear contract requirements, the agency cannot ensure that the contractor is making the best decisions toward accomplishing Deepwater IT goals.

- Insufficient C^4ISR funding has restricted accomplishing the "system-of-systems" objectives that are considered fundamental to Deepwater asset interoperability.

Question 2. What are some of the top action items that the Coast Guard should be taking to ensure that this program gets back on track?

Answer. There are a number actions being contemplated and implemented which should greatly improve the Coast Guard's management of the Deepwater Program. They include:

- Implementing each of the recommendations contained in the DAU Study;
- Reassert technical oversight and control over the Deepwater contract;
- Accelerate the hiring of trained and certified civilian acquisition specialists;
- Ensure unfettered OIG access to contractor personnel, documents, and information;
- Postpone construction of NSCs 3–8 until a mitigation plan to address all NSC structural deficiencies is fully developed and independently evaluated; and
- Postpone construction of the FRC until after a design has been independently evaluated by an independent third party.

Question 3. Are there any recommendations in your reports that would require legislation?

Answer. Not at this time.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO RICHARD L. SKINNER

Question 1. Over the past 2 months, *The New York Times* and *The Washington Post* have run scathing articles detailing the mismanagement of the Deepwater contract. *The Times* quoted a Coast Guard engineer, Anthony D'Armiento, as saying: *"This is the fleecing of America. It is the worst contract arrangement I've seen in my 20 plus years in naval engineering."* I believe the Coast Guard should drop its contractors, solicit new contractors through an open and competitive bidding process, and assert firm control over every important managerial decision. Do you agree?

Answer. That is one alternative. However, we believe the Coast Guard can salvage the program if they move quickly to gain control over the existing contract.

Question 2. If not, what is the alternative?

Answer. The Coast Guard is in the process of initiating a major reorganization of its Acquisition Directorate and Deepwater Acquisition Program. As far as the reorganization of the Deepwater Program is concerned, the Coast Guard has stated that it is committed to:

- implementing each of the recommendations contained in the DAU Study;
- asserting technical oversight and control over the Deepwater contract;
- improving management accountability by requiring the development of business case analyses in support of key Deepwater acquisition decisions;
- removing the H.60 clause which allows ICGS to be reimbursed for the expenses associated with contract delays;
- amending the Deepwater contract to include off ramps, improve competition, and eliminate self-certification by contractors;
- accelerating the hiring of trained, experienced, and certified civilian acquisition specialists;
- ensuring unfettered OIG access to contractor personnel, documents, and information;
- developing a plan to eliminate the structural design issues with NSCs 1–2;
- postponing construction of NSCs 3–8 until a mitigation plan to address all NSC structural deficiencies is fully-developed, independently evaluated, and funded; and
- postponing construction of the FRC until after a design has been evaluated by an independent third party.

If fully-implemented, the aforementioned changes should significantly improve managerial accountability and control, reduce acquisition costs through increased competition, and enhance the safety and mission capability of Deepwater mission assets.

Question 3. Do you believe that Lockheed and Northrop made management and purchasing decisions that increased their bottom line at the expense of efficiency and concern for the taxpayer?

Answer. I do not know.

Question 4. Do you believe that the delays and management problems with Deepwater have compromised national security?

Answer. Yes, in the sense that the design problems with the 110′–123′ Modernization project, the suspension of the FRC design effort; and the structural design and safety issues associated with the NSC have delayed the deployment of Deepwater assets that are critical to maritime security. It has also cost taxpayers hundreds of millions of dollars that could have been better spent on additional aircraft and cutters to further improve the Coast Guard's ability to perform its Deepwater and Ports and Waterways Coastal Security missions.

Question 5. Does the Deepwater contract allow the government to recoup funds stemming from design flaws for the cutters and patrol boats that will have to be fixed? Who pays for that?

Answer. The Department is looking into this very issue. The initial indications are that the Coast Guard (and American taxpayers) will end up footing the bill for the 123′ FRC and NSC design fiascos.

Question 6. Mr. Skinner, Mr. Caldwell—both your offices have issued various reports on Deepwater and made recommendations to improve the program. The GAO made 11 recommendations to the Coast Guard in 2004 ranging from implementing a plan to increase acquisition staff and oversight to establishing criteria to justify design and engineering changes. Some of these have been implemented, some haven't.

These recommendations are good. But at the same time, aren't they just tiptoeing around the fact the contract structure is fundamentally flawed?

Answer. The contract that was signed was flawed, however, Coast Guard has recently identified steps to gain control over the contract.

Question 7. Would you agree that, 9/11 notwithstanding that the main reason for the delays and cost overruns with Deepwater stem from the unusual contracting arrangement that empowered the contractors to take matters into their own hands as well as the Coast Guard's inability to assert control over the program?

Answer. Yes.

Question 8. Do you believe costs could be contained and that Deepwater could be completed earlier than expected if the Coast Guard decided against extending Lockheed's contract and instead found new contractors through a competitive bidding process under improved Coast Guard oversight?

Answer. I cannot say.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. TRENT LOTT TO RICHARD L. SKINNER

Question. Please describe the ship design and construction expertise of your staff and any outside experts you used to analyze the National Security Cutter.

Answer. As I testified before the Committee in the hearing held on February 14, 2007, the OIG's report on the acquisition of the National Security Cutter relied entirely upon the analyses of subject matter experts with over 300 years of experience as structural naval architects and professional engineers. Further, these individuals are internationally renowned as leaders in their field with numerous publications and ship design and construction industry honors to their credit.

For example, the Coast Guard's subject matter experts assigned to the Coast Guard's Engineering Logistics Command (ELC) who initially identified the structural design issues associated with the NSC (Rear Admiral E. Brown, Captain K. Jarvis, R. Sheinberg, C. Cleary, K. Brower, Dr. A.L. Tunik, and P. Hirsimaki have collectively, more than 252 years of ship design and construction experience. When you add the experience of Robert Sielski, Robert Scott, and Dr. David Kihl and his staff at Carderock, the experience level is even higher. All of these individuals are of international renown in their respective fields. Consequently, it should not be a surprise that their conclusions were similar in substance to those reported by the ELC back in March 2004. Subject matter experts include:

Rear Admiral Erroll Brown (USCG Retired)—33 years experience—Rear Adm. Brown graduated from the U.S. Coast Guard Academy in 1972. He majored in Marine Engineering and has a Masters degree in Naval Architecture and Marine Engineering, with a second Masters in Industrial and Operations Engineering from the University of Michigan.

Admiral Brown was awarded a Masters of Business Administration degree from Rensselaer Polytechnic Institute in 1986 and graduated the Naval War College with a Masters degree in National Security and Strategic Studies in 1994. He also completed Harvard's John F. Kennedy School of Governmental Programs for Senior Executives in National and International Security.

His awards include the Legion of Merit, Meritorious Service Medal (2 awards), Secretary's Award for Meritorious Achievement, and the U.S. Coast Guard Commendation Medal (2 awards).

Final assignment: Assistant Commandant for Systems (G–S).

Captain Kevin Jarvis—29 years of Coast Guard experience in naval architecture and marine engineering. Predominance of service was in naval engineering and logistic-related assignments 1993 DOT–USCG Federal Engineer of the Year award. Served on 3 cutters as engineering officer and chief engineer. Other professional qualifications include:

- Graduate, USCG Academy—BSE in Electrical Engineering.
- Two MS degrees from University of Michigan; one in Naval Architecture and Marine Engineering and one in Mechanical Engineering.
- MA in National Security and Strategic Studies from the Naval War College.
- MS in Quality Systems Management with an emphasis in Six Sigma from the National Graduate.

Final assignment: Commanding Officer, U.S. Coast Guard, Engineering Logistics Command.

Rubin Sheinber—40 years of experience in naval architecture/engineering. Other professional qualifications include:

- Graduate, University of Dansk, Poland—B.S. and M.S. in Naval Engineering.
- Eleven years working for a European shipyard that produced 30 ships a year.
- Chief Naval Architect for 8 years for Halliburton Corporation where he directly supervised 400 personnel assigned to several European shipyards.
- From 1987 to 2007, ship design and construction for the U.S. Coast Guard. During the course of the NSC audit, he was the Coast Guard's Chief Naval Architect at their Curtis Bay Coast Guard facility located outside of Baltimore, MD.

Mr. Sheinberg is currently assigned as Chief of Naval Architecture, U.S. Coast Guard, Engineering Logistics Command.

Dr. Alfred Tunik—45 years of experience as a naval architect. He is a graduate in Naval Architecture from the Leningrad Shipbuilding Institute, working for 20 years at research institutes in Russia, including the Arctic and Antarctic Research Institute. After immigrating to the United States, he worked for 18 years at the American Bureau of Shipping, where he developed rules for ice-strengthened ships. In 1999, he began work as an independent consultant. Dr. Tunik helped to develop the first Russian Register rules for Arctic Ships. He is currently involved in developing the first international rules for polar ships. He has participated in several Arctic ship trials, and has published more than 30 works in English on Arctic engineering and ice mechanics. Dr. Tunik is currently with the U.S. Coast Guard.

Chris Cleary—24 years of experience as a General Naval Architect. He serves as the Deepwater Program contact within the Engineering Logistics Command, and was the representative on the National Security Cutter's Integrated Product Team. Other professional qualifications include:

- Graduated from the Stevens Institute of Technology, B.S. in Naval Engineering, 1983.
- Began working with the Coast Guard Design Branch in 1983, transitioning to the Engineering Logistics Command in 1996.
- Chairman of a NATO specialist team on small ship design.
- Previous work included: HEALEY, WLB 225, Great Lakes Ice Breaker, and Deepwater.
- Mr. Cleary currently spends approximately 60–70 percent of his work on new acquisitions.

Kenneth Brower—45 years of experience as a naval architect. Mr. Brower played an important role in other ships built for the Navy as a Chief Naval Architect. Other professional qualifications include:

- Consultant to Bath Iron Works where he worked on the DD(X) project. Three years at George Sharp Co., head of the structural design group. Projects included: CGN–38 Class and Staten Island Ferry.

- John J. McMullen & Associates for 3 years as project engineer on the U.S. Navy's Ticonderoga class cruiser (designer).
- Between 1976 and 1978 worked for design consulting firm, Santa Fe Corp.
- Between 1978 and 2001 operated his own naval architectural firm that specialized in comparative naval architecture. Mr. Brower has studied and published extensively on ship design issues. Also worked as a consultant to Northrop Grumman Ship Systems during the early stages of the Deepwater program and also consulted on the design of U.S. Coast Guard icebreakers and buoy tenders.
- Served as consultant to Rosenblatt & Son (a company that performed much of early design work on Deepwater surface assets including the NSC, OPC, and FRC.
- Since January 2002, Mr. Brower as been with the U.S. Coast Guard, Engineering Logistics Center.

Paul Hirsimaki—36 years of naval architect and marine engineering experience. Other professional qualifications include:

- Graduate, Massachusetts Institute for Technology, B.S. Naval Architecture (1970).
- Naval architect with NAVSEA from 1970–1978, with a prominent role in several U.S. Navy ship construction projects including the DD993 and the LSD41 design.
- Structural engineer for the U.S. Coast Guard, Engineering Logistics Command from 1979–2007, performing structural, stability and weight analyses for a variety of cutters constructed for and operated by the Coast Guard.

Mr. Hirsimaki is currently a civilian employee with the U.S. Coast Guard Engineering Logistic Center (since 1978).

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. OLYMPIA J. SNOWE TO RICHARD L. SKINNER

Question 1. The DHS Office of Inspector General is currently putting the final touches on a report regarding the Fast Response Cutter (DHS OIG–07–23). In the course of that investigation, did you find any indications that the Coast Guard is making progress with its oversight responsibilities?

Answer. Our Office has identified a number of systemic problems with the Deepwater Program, and has made numerous recommendations, that, if implemented, will greatly improve oversight of the program. Thus far, our Office has issued the following three reports associated with the acquisition of Deepwater assets/systems:

Improvements Needed in the U.S. Coast Guard's Acquisition and Implementation of Deepwater Information Technology Systems (OIG–06–55)

Acquisition of the National Security Cutter, United States Coast Guard (OIG–07–27)

110′/123′ Maritime Patrol Boat Modernization Project, United States Coast Guard (OIG–07–23).

These reports identified a number of systemic problems with the Deepwater Program contract, including, Coast Guard's:

- failure to exercise an appropriate level of technical oversight over the Deepwater contract;
- willingness to amend asset performance requirements to meet asset capabilities rather than Coast Guard mission needs;
- failure to develop and document the business case underlying key Deepwater decisions including the decision to go ahead with NSC production against the written advice of the Coast Guard's subject matter experts;
- willingness to issue waivers for critical equipment and C^4ISR system installations (*i.e.,* installation of low smoke cables and the installation of topside navigation and communications equipment on the 123-foot patrol boat) with the knowledge that the equipment/systems did not meet minimum contract performance requirements; and
- ill-defined performance requirements for the National Security Cutter and the 110′/123′ patrol boat modernization project;

And,

- contractor willingness to install equipment and systems that do not meet minimum contract requirements; and
- self-certification performed, not by an independent third party, but by the Deepwater contractor or sub-contractor.

These issues were prominent topics of discussion between my staff and the Coast Guard over the course of these three audits. However, it was not until after the most recent reports on the National Security Cutter and the 123-foot Patrol Boat were issued did the Coast Guard begin to acknowledge the magnitude of the managerial and technical oversight issues impacting their Acquisitions Directorate in general, and the Deepwater Program in particular.

The recently issued *Blueprint for Acquisition Reform in the Coast Guard* (Blueprint) is an honest attempt by the Coast Guard to review lessons learned from past acquisitions and evaluate input from the Defense Acquisition University (and other independent sources) to identify specific issues that have impeded the efficient execution of past acquisition projects. The Blueprint contains a number of initiatives, which, if fully implanted, should improve the efficiency, effectiveness, and economy of future Coast Guard acquisitions. While the Blueprint includes a number of initiatives, few if any have been implemented. Consequently, it remains to be seen exactly how effective it will be.

OIG strongly recommends the Coast Guard implement the following corrective actions as they consider any reorganization of Deepwater acquisitions, including:

- implementing each of the recommendations contained in a recent Defense Acquisition University study;
- asserting technical oversight and control over the Deepwater contract;
- improving management accountability by requiring the development of business case analyses in support of key Deepwater acquisition decisions;
- removing the H.60 clause which allows ICGS to be reimbursed for the expenses associated with contract delays;
- amending the Deepwater contract to include off ramps, improve competition, and eliminate self-certification by contractors;
- accelerating the hiring of trained, experienced, and certified civilian acquisition specialists;
- ensuring unfettered OIG access to Coast Guard and contractor and subcontractor personnel, documents, and information;
- developing a plan to eliminate the structural design issues with NSC's 1–2;
- postponing construction of NSC's 3–8 until a mitigation plan to address all NSC structural deficiencies is fully-developed, independently evaluated, and funded;
- ensuring the fatigue-life of the NSC and OPC meet the 230 days underway (in the General Atlantic and North Pacific regions) standard as stated in the original Deepwater contract; and
- postponing construction of the Fast Response Cutter until after the design has been evaluated by an independent third party (*i.e.,* the U.S. Navy's Surface Warfare Center—Carderock Division).

If these corrective actions are fully implemented, these changes would:

- improve managerial and contractor accountability;
- reassert Coast Guard dominance over the development and implementation of Deepwater technical requirements;
- reduce Deepwater acquisition costs through increased competition;
- increase the level of transparency surrounding key Deepwater decisions; and
- enhance the safety and mission capability of Deepwater mission assets.

Question 2. The DHS OIG Report on the Acquisition of the National Security Cutter states the Coast Guard allowed the Contractor to self-certify compliance with the standards. In the footnotes of the report (page 14), the Deepwater Surface Statement of Objectives state, ". . . performance specification and cutter specific certification matrix are certified either by self-certification or by an independent agent, except that the contractor shall use American Bureau of Shipping (ABS) to certify compliance with ABS standards." What are the practical differences and implications between ABS certification and "self-certification" with ABS certifying compliance with ABS standards?

Answer. The practical difference between certifications performed by the American Bureau of Shipping (ABS) and "self-certifications" performed by ICGS is that certifications performed by ABS represent an independent evaluation of the contrac-

tor's compliance with the design and construction standards identified in the Deepwater contract. According to the Deepwater contract, "The role of the certification agent is to serve as an independent agent who verifies that the contractor has demonstrated compliance with the applicable standards."

Background—In June 1999, the Coast Guard and the ABS signed a Memorandum of Agreement (MOA) to jointly develop a Cutter Certification Plan that included 1,175 individual standards intended to govern the design, construction, and certification of all cutters acquired under the Deepwater Program. These standards were identified to ensure that the bidding industry teams' proposed cutter designs would result in vessels that met the Coast Guard's unique safety and operational requirements. The ABS is one of ten organizations that belongs to the International Association of Classification Societies whose responsibilities include the establishment and application of technical standards related to the design, construction of ships and offshore structures. The standards developed by the classification societies are intended to contribute to the structural strength and integrity of essential parts of the ships hull and its appendages. As an independent, self-regulating body, ABS has no commercial interest related to ship design, ship building, or ship operations and therefore does not suffer impairments that would prevent it from serving as an independent certification agent on behalf of the Coast Guard.

The joint ABS/Coast Guard Cutter Certification Plan further specified a certifying agent for each design standard to ensure that all cutters would be objectively evaluated for compliance. The MOA between ABS and Coast Guard stipulated that ABS would be the designated certification agent for any "ABS standards", *i.e.,* modified ABS Rules applicable to the hull, mechanical, and electrical areas of Coast Guard vessels, that were identified in the Cutter Certification Plan. However, when it issued its Deepwater Request for Proposal, the Coast Guard allowed the bidding industry teams to select alternatives to approximately 85 percent of the 1,175 joint Coast Guard/ABS design and construction standards, and it further permitted industry to select the certifying entity for any non-ABS design standards that were selected as alternatives to the originals. In submitting its Deepwater proposal, ICGS elected to self-certify its compliance with all of the alternatives it was permitted to select for any non-ABS design standards.

Implications—The Coast Guard's decision to allow the Deepwater contract bidders to deviate from joint ABS/Coast Guard Cutter Certification Plan without Coast Guard approval gave the selected systems integrator, ultimately ICGS, wide latitude in developing the designs for all cutters to be acquired under Deepwater, including the National Security Cutter, and the Fast Response Cutters. The decision also increased the risk that bidders could select potentially ill-defined or inappropriate cutter design criteria that could be inconsistent with the original intent of the MOA. Further, by allowing the systems integrator the authority to self-certify its compliance with most design standards, the Coast Guard eliminated a key oversight tool for ensuring that cutter designs developed under the Deepwater contract met both contractual and Deepwater mission performance requirements. For example, our review, "110′/123′ Maritime Patrol Boat Modernization Project" (OIG–07–23), highlighted the flaws associated with the concept of contractor self-certification with design standards. In two instances, ICGS certified compliance with the design standards when in fact the actual construction of the 123′ patrol boat was not compliant with the standards identified in the certification plan.

In our report, "Acquisition of the National Security Cutter" (DHS OIG–07–23), we discussed the inability of OIG auditors to obtain unfettered access to Coast Guard and contractor personnel, documents, and information. This was an unprecedented situation that was contrary to Federal statute and Department directive. In its response to the NSC report, the Coast Guard stated that the Department is working to promulgate Department-wide guidance on dealing with the DHS Office of Inspector General. We look forward to resolving this issue in the near future.

Question 3. In the DHS OIG Report on the *Acquisition of the National Security Cutter* (DHS OIG–07–23), the OIG reports considerable concern with the difficulties encountered trying to obtain access and information from the Coast Guard and ICGS. In its response, the Coast Guard stated that the Department is working to promulgate Department-wide guidance on dealing with the DHS Office of Inspector General. What is the status on the DHS OIG memo to the Secretary outlining Department-wide policy concerning agency cooperation with the DHS IG?

Answer. As discussed in our report, we provided a one-page memorandum for the Secretary's signature identifying our authorities, and a four-page document providing Frequently Asked Questions regarding interactions with our auditors and inspectors, to be issued to all Department of Homeland Security personnel. We are aware of no activity by the department with respect to either document as of the date of the hearing.

Question 3a. Has the DHS OIG faced similar problems with Coast Guard cooperation in previous or currently ongoing audits?

Answer. Yes. During the OIG's review of the Coast Guard's Helicopter Interdiction Squadron Lease and the HH–65 Re-engining Project. The HITRON audit was not completed due to competing priorities within the OIG, Office of Audits, and the delays resulting from the inability of staff to obtain timely and unfettered access to Coast Guard and contractor personnel, documents, and information. As a result, events overtook the audit as problems with the leased helicopter (the MH–68) were eventually resolved and the Coast Guard moved ahead with its HH–65 Re-engining Project. The Coast Guard intends to replace the MH–68 helicopter with tan AUF version of the HH–65C and terminate its HITRON lease during January 2008.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DAVID VITTER TO RICHARD L. SKINNER

Question 1. You indicated that you received a "Hotline Complaint" regarding the 110′/123′ conversion. Did this complaint include any allegations regarding the hull or structure of the vessel?

Answer. No.

Question 2. Do you believe that the current "bridge strategy" for the coastal patrol boats is adequate to fulfill the demands of this workhorse?

Answer. No. The Coast Guard needs to replace its aging and deteriorating fleet of Island Class patrol boats as soon as possible. The Coast Guard's March 14, 2007, decision to build the Fast Response Cutter-B, outside of the Deepwater program is a good first step in resolving the Coast Guard's ever-expanding patrol boat gap. The Coast Guard could further close the patrol boat capability gap if it would agree to built the Fast Response Cutter-B at more than one shipyard. Building the cutter at more than one shipyard would:

- expand the competition (and the potential savings) associated with the next round of Fast Response Cutters (FRC) to be built;
- expedite the deployment of the FRC and hasten the end to the patrol boat gap; and
- hasten the retirement (and the expense) of operating and maintaining the Island Class fleet.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO STEPHEN L. CALDWELL

Question 1. Do the findings of the Defense Acquisition University confirm the findings of your various studies that there are some recurring, programmatic problems with Deepwater that are bigger than problems with specific assets?

Answer. Yes, the Defense Acquisition University (DAU) findings are similar to and confirm many of the issues we have identified in the past. In 2004 and in subsequent assessments in 2005 and 2006, we reported concerns about the Deepwater program in three main areas—improving program management, strengthening contractor accountability, and promoting cost control through greater competition among potential subcontractors. In its recent study, DAU echoed some of these same concerns. For example, the report notes that the Coast Guard has insufficient number of acquisitions personnel and insufficient experience in major systems acquisition, and lacks a management model and processes sufficient for the management and oversight of the Deepwater major systems acquisitions. These broader concerns, as well as others DAU raised, go beyond the specific problems at the asset level.

Question 2. Your testimony finds that there is an inherent conflict of interest in giving private industry so much control over a government contract. You state that "Giving contractors more control and influence over the government's acquisition in a systems integrator role creates a potential risk that program decisions and products could be influenced by the financial interest of the contractor—which is accountable to its shareholders—which may not match the primary interest of the government, maximizing its return on taxpayer dollars." Doesn't this risk grow when we are talking about such a long-term, open-ended contract as we have here with the Deepwater program?

Answer. The Deepwater contract is an Indefinite Delivery/Indefinite Quantity (IDIQ) contract. Generally an IDIQ contract is not the type of contract in which the government's risks are open-ended. Under an IDIQ contract the government orders supplies or services when needed. The government can limit the amount of supplies

or services it orders by minimizing the number of task or delivery orders it creates. The inherent conflict of interest in giving private industry increased control over a government contract is one example of a conflict. Conflicts of interests may arise in many contexts. Management controls and contract clauses may be implemented to minimize the risk of conflicts to the government.

Question 3. GAO was the first entity to warn of risks inherent in the Deepwater contract approach. A top concern was the lack of competition required. GAO found that the Deepwater contract gives sole authority to the industry contractor to determine whether to "make-or-buy" assets, and whether to hold open competition for subcontracts. How have these concerns been borne out?

Answer. We have noted in our past work that the Coast Guard's hands-off approach to make-or-buy decisions and its failure to assess the extent of competition raised questions about whether the government would be able to control Deepwater program costs. While the Coast Guard has now taken steps to establish a reporting requirement for the systems integrator to provide information on competition on a semi-annual basis, the Coast Guard is currently planning to procure remaining short-range prosecutor vessels outside of the systems integrator contract. By doing so, the Coast Guard expects to achieve cost savings. We will continue to assess the Coast Guard's efforts to hold the systems integrator accountable for ensuring an adequate degree of competition.

Question 4. Given the open-ended nature of this kind of contract, where Coast Guard merely defined its needs and ICGS develops assets to meet them, isn't a cost-plus arrangement particularly risky?

Answer. Cost reimbursement orders issued under IDIQ contracts, like some of those issued under the Deepwater contract, are designed to be used when there are uncertainties in contract performance which do not permit costs to be estimated with sufficient accuracy to use any type of fixed-price order. In the Coast Guard's case, use of performance-based, cost reimbursement orders, in which the Coast Guard defines a need and asks the contractor to develop an asset that meets its need may be an appropriate response. The questions that help identify risk to the government include: (1) How well established are the government's requirements? and (2) How well has the government managed and supervised the contractor's performance?

Question 5. Last year, GAO brought to our attention problems with the design of the Fast Response Cutter. In the course of your audit, did you reach a conclusion as to what led the Coast Guard to the situation they now find themselves in?

Answer. We did not reach any conclusions as to the root cause(s) for the suspension of FRC design work. As we reported, the Coast Guard suspended FRC design work in February 2006 due to high technical risks with the emerging design. In particular, an independent design review by third-party consultants preliminarily demonstrated, among other things, that the FRC would be far heavier and less efficient than a typical patrol boat of similar length. We did note that this review validated some concerns that had been raised by the Coast Guard's Engineering Logistics Center over 1 year prior.

Question 6. Based on your June 2006 audit of the Fast Response Cutter procurement program, how much money has been invested in the design and analysis of the composite Fast Response Cutter?

Answer. As we reported, as of May 2006, the Coast Guard had spent approximately $26.7 million on design and test efforts. We have not conducted any additional analysis to determine how much has been spent on these efforts since that time.

Question 7. At present, does the Coast Guard or the American people have anything to show for that investment?

Answer. The Coast Guard had planned to accept the first FRC in 2007; however, the Coast Guard's decision to suspend design work in late February 2006 has precluded that from occurring. Since the design suspension, the Coast Guard has begun to re-evaluate the use of a composite hull material for a newly-designed FRC (FRC–A). The Coast Guard has commissioned a business case analysis comparing the use of composite versus steel hulls and the Department of Homeland Security's Science and Technology Directorate will be conducting tests on composite hull technology. In the interim, the Coast Guard is planning to acquire a commercial "off-the-shelf" patrol boat design that can be adapted for Coast Guard use (FRC–B) and is working toward having the first FRC–B delivered in 2010. While there is not much tangible to show for the money invested in the FRC program to date, we know there have been lessons learned and are encouraged by the Commandant's recent pledge to: (a) reaffirm the role of the Coast Guard's Chief Engineer as the technical authority for all acquisition projects; (b) employ independent, third-party design reviews as new

assets are developed or major modifications are contemplated; and (c) cultivate a more robust relationship with Naval Sea and Air Systems Commands to leverage outside technical expertise.

Question 8. In 2004, GAO provided 11 recommendations to the Coast Guard for improving its management of the Deepwater project. Don't several of the open recommendations involve the problems with the Integrated *Product* Teams—the core mechanism for integrating the Coast Guard's experts and programs into the Deepwater process?

Answer. We believe that effective management of the Deepwater program depends heavily on strong collaboration among the Coast Guard, the systems integrator, and subcontractors. The Integrated Product Teams (IPTs) are the vehicle used to bring these parties together and were established as the primary tool for managing the Deepwater program. While IPTs are an important element of the Deepwater program, only 1 of the 11 recommendations we made in 2004 pertained to the IPTs. Specifically, we recommended that the Coast Guard strengthen the IPTs by providing them better training, approving charters, and improving systems for sharing information between teams. The Coast Guard has undertaken some efforts to address these problems and we will continue to monitor the Coast Guard's progress at addressing this recommendation.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUYE TO STEPHEN L. CALDWELL

Question 1. Mr. Caldwell, do you agree that eight of the eleven recommendations that GAO provided to the Coast Guard back in 2004 for improving Deepwater oversight, have been fully implemented, and only three remain outstanding?

Answer. In April 2006, we reported that of the 11 recommendations we made in 2004, only 5 had been implemented. The Coast Guard does not plan to implement one of the recommendations, pertaining to establishing a baseline to determine whether the acquisition approach is costing the government more than the traditional asset replacement approach. We reported in 2006 that the 5 remaining recommendations had been only partially implemented. These are:

- Improve integrated product teams responsible for managing the program by providing better training, approving charters, and improving systems for sharing information between teams.
- Provide field personnel with guidance and training on transitioning to the new Deepwater assets.
- Establish a timeframe for putting steps in place to measure contractor's progress toward improving operational effectiveness.
- Establish criteria to determine when to adjust the project baseline and document the reasons for change.
- Develop a comprehensive plan for holding the systems integrator accountable for ensuring adequate competition among suppliers.

We are in the process of assessing Coast Guard actions in response to our recommendations and expect to report on the results of our analysis later this year.

Question 2. How significant are the three open recommendations to Coast Guard management of the Deepwater contract?

Answer. We believe that each of the 5 open recommendations is important to the Coast Guard's ability to manage and oversee the Deepwater contract. They fall into three broad areas: effectively implementing key components of management and oversight; improving contractor accountability; and controlling costs through competition. We will continue to assess the Coast Guard's progress in our ongoing work.

Question 3. The Defense Acquisition University report raises a much broader set of concerns with respect to the Deepwater contract and contracting approach. Do you agree with their findings and recommendations?

Answer. The DAU study found that some of the causes that have significantly increased the risk of procuring the Deepwater capabilities included insufficient numbers of Coast Guard acquisition personnel and lack of a management model and processes sufficient for managing and overseeing this acquisition. These broader concerns go beyond the specific problems at the asset level. We believe the DAU's findings and recommendations will be helpful for the Coast Guard as it moves forward with the Deepwater acquisition.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO STEPHEN L. CALDWELL

Question 1. Over the past 2 months, the *New York Times* and *The Washington Post* have run scathing articles detailing the mismanagement of the Deepwater contract. *The Times* quoted a Coast Guard engineer, Anthony D'Armiento, as saying: *"This is the fleecing of America. It is the worst contract arrangement I've seen in my 20 plus years in naval engineering."* I believe the Coast Guard should drop its contractors, solicit new contractors through an open and competitive bidding process, and assert firm control over every important managerial decision. Do you agree?

Answer. Whether the Coast Guard terminates its contractors and makes award to new contractors or brings the work in-house will not necessarily produce a successful acquisition result. Proper management attention will be needed in any case to obtain a successful acquisition result. That being said, competition is a key component for controlling costs. The Commandant's recent pledge to reaffirm the role of the Coast Guard's Chief Engineer as the technical authority for all acquisition projects appears to be designed to assert more government control over important management decisions.

Question 2. If not, what is the alternative?

Answer. See the response to *Question 1* above.

Question 3. Do you believe that Lockheed and Northrop made management and purchasing decisions that increased their bottom line at the expense of efficiency and concern for the taxpayer?

Answer. GAO has not done any work to support this conclusion. What our work has indicated is that with proper surveillance and management attention, among other factors, contractor efficiency can be increased.

Question 4. Do you believe that the delays and management problems with Deepwater have compromised national security?

Answer. It is true that problems in fielding effective Deepwater assets can have an adverse impact on the Coast Guard's operational capabilities. For example, the Coast Guard's decision to remove its eight 123-foot patrol boats from service in November 2006 after the conversion of these vessels from 110-foot patrol boats failed has added to the Coast Guard's critical gap in patrol hours. To the extent that these patrol boats served a variety of missions, their removal from service means that the Coast Guard faces greater challenges in meeting these missions, some of which may involve national security or homeland security interests.

Question 5. Does the Deepwater contract allow the government to recoup funds stemming from design flaws for the cutters and patrol boats that will have to be fixed? Who pays for that?

Answer. At this time, we are not aware of any special clause in the Deepwater contract that would allow the government to recoup costs for design flaws, but we are continuing to review the contract. Government contracts generally, and the Deepwater contract specifically, are subject to the Contract Disputes Act. Under the Contract Disputes Act, disagreements over responsibility for contract performance proceed through a disputes process where each party has an opportunity to present its claims and arguments for resolution. This process is incorporated into the contract through a disputes clause. These clauses generally only allow for the recovery of costs once responsibility for the subject of the disagreement has been determined. In addition, while it does not appear the contract addresses cost recoupment specifically, the contract does contain warranty provisions, which if breached, permit the government to avail itself of certain remedies. Without special provisions that speak to recoupment, the Coast Guard and ICGS will have to resolve any such disagreements through the Federal Acquisition Regulation disputes clause and process incorporated into the contract.

Question 6. Mr. Skinner, Mr. Caldwell—both your offices have issued various reports on Deepwater and made recommendations to improve the program. The GAO made 11 recommendations to the Coast Guard in 2004 ranging from implementing a plan to increase acquisition staff and oversight to establishing criteria to justify design and engineering changes. Some of these have been implemented, some haven't. These recommendations are good. But at the same time, aren't they just tiptoeing around the fact the contract structure is fundamentally flawed?

Answer. As GAO work has indicated in the past, contract management and execution have a greater impact on the government's risks than the contract structure.

Question 7. Would you agree that, 9/11 notwithstanding that the main reason for the delays and cost overruns with Deepwater stem from the unusual contracting arrangement that empowered the contractors to take matters into their own hands as well as the Coast Guard's inability to assert control over the program?

Answer. Our work has shown that after 9/11, the revisions to Deepwater led to increases of $7 billion in the overall estimates across Deepwater assets. The total increase—from $17 billion to $24 billion—was largely due to enhanced homeland security mission requirements. Beyond that, GAO has not done any work to specifically identify the sources of other cost increases across Deepwater assets, or the extent that the type of contracting arrangement led to additional costs. In 2004, GAO recommended that the Coast Guard establish a baseline for determining whether this acquisition approach is costing the government more than the traditional asset replacement approach, but the Coast Guard decided not to implement this recommendation.

Question 8. Do you believe costs could be contained and that Deepwater could be completed earlier than expected if the Coast Guard decided against extending Lockheed's contract and instead found new contractors through a competitive bidding process under improved Coast Guard oversight?

Answer. Any new contract awarded for the remaining work will more than likely have to allow the new contractor to invoice the government for its start-up costs. ICGS may have invoiced similar costs for its own effort. In addition, obtaining competitive offers for an effort of this size may not reduce the time frames for performance as any competition takes time for the government to prepare a solicitation, offerors to prepare responses, and the government to evaluate those responses. Further, a new contractor may need time to bring its resources up-to-speed, which may include hiring new personnel or providing new facilities, in order to respond to the government's needs. That being said, however, competition is a key component for controlling costs, and injecting more competition in the Deepwater program could help contain costs.

Question 9. Mr. Caldwell, how many other major Federal contracts that use the Systems Integrator approach are currently in operation?

Answer. We do not have a precise number of major Federal contracts that use a systems integrator approach. This type of business arrangement can give the contractor extensive involvement in requirements development, design, and source selection of major systems and subsystem contractors. For example, GAO has reviewed the Army's Future Combat System (FCS), which employs a lead systems integrator to assist in defining, developing, and integrating a network of weapons and other systems. The Army's decision to employ a lead systems integrator for the FCS program was framed by two factors: (1) the ambitious goals of the FCS program, and (2) the Army's capacity to manage it. A systems integrator has also been employed by the Department of Homeland Security to help secure U.S. borders and reduce illegal immigration under the Secure Border Initiative (SBI).

Question 10. Was there a comparable military contract that the Coast Guard could have used to compare its approach before it decided to empower the contractors with so much authority?

Answer. We have not done any analyses that would have identified a comparable military contract that the Coast Guard could have used to compare its approach. In terms of the Coast Guard's decision to use this approach, we reported in 2001 that documentation detailing the basis for the decision—the depth of the analysis performed, the factors considered, the expertise sought (people contacted), and the compelling reasons why the approach was chosen—was not recorded prior to its approval by Coast Guard acquisition officials. At that time, we noted that without thorough documentation, the rigor of the Coast Guard's analysis was unknown.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. OLYMPIA J. SNOWE TO STEPHEN L. CALDWELL

Question 1. As part of the GAO's 2005 review of the Deepwater program, GAO proposed 11 recommendations for the Coast Guard to implement to improve contractor oversight and ensure greater accountability. In your 2006 report, the GAO states that the Coast Guard has implemented or partially implemented 10 of the 11 recommendations. In light of what we now know regarding the National Security Cutter, has the Coast Guard made additional progress toward fully implementing your recommendations?

Answer. Since our 2004 report, the Coast Guard has taken a number of steps to address issues contained in these recommendations. In February 2007, the Coast Guard reported to Congress on the status of its efforts in implementing our recommendations to improve program management, ensure greater accountability, and facilitate cost control through competition. We are in the process of assessing Coast

Guard actions in response to our recommendations and expect to report on the results of our analysis later this year.

Question 1a. Does the GAO believe the recommendations go far enough?

Answer. We made these original recommendations 3 years ago. While we strongly believe they were comprehensive at the time and have led to some positive changes in the way the Coast Guard is managing and overseeing the Deepwater program, the program continues to evolve over time and our ongoing work may lead to additional recommendations.

Question 1b. In the research GAO conducted on Deepwater over the last several years, was there any indication—either from the Coast Guard or from your own auditors—of the problems that have come to light with respect to the National Security Cutter?

Answer. While we have been reviewing the Deepwater program for a number of years, the focus of our reviews has been on issues related to the condition of the legacy assets that are being replaced, changes to the Deepwater implementation plans to incorporate post-9/11 homeland security requirements, and management and oversight of the program. We have only recently shifted the focus of our reviews to the individual assets that are being designed and constructed as part of the Deepwater program. In planning and performing our Deepwater reviews, we coordinate not only with our Congressional clients, but also with others in the Federal audit community, in particular, the Department of Homeland Security's Office of Inspector General (DHS–IG). In late 2005, we determined that DHS–IG was planning to begin a review of the National Security Cutter and in an effort to not duplicate work they were doing, have delayed any work we planned involving the NSC until they completed their review. Now that the DHS–IG report has been released, we are now in the process of determining whether there are remaining issues that should be pursued that were not addressed in the DHS–IG report.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. DAVID VITTER TO STEPHEN L. CALDWELL

Question. Do you believe that the Deepwater program is still "risky," as GAO stated in a 2004 report?

Answer. We first described the Deepwater program as "risky" in 2001 due to the unique, untried acquisition strategy for a program of this magnitude within the Coast Guard. Because it did not have the technical expertise or resources, the Coast Guard decided to use a system-of-systems approach in which it relied on a systems integrator (contractor) to replace the Coast Guard's deteriorating assets with an integrated package of aircraft, vessels, associated communications equipment, and supporting logistics. In a system-of-systems arrangement, the delivery of Deepwater assets is interdependent and schedule slippages and uncertainties associated with potential changes in the design or deployment of any one asset can increase the overall risk that the Coast Guard might not be able to meet its expanded homeland security missions within given budget parameters and milestone dates. In addition, the Deepwater program is a performance-based acquisition, meaning that it is structured around the results to be achieved rather than the manner in which work is performed. If performance-based acquisitions are not appropriately planned and structured, there is an increased risk that the government may receive products and services that are over cost estimates, delivered late, and of unacceptable quality. In 2004 and in subsequent assessments in 2005 and 2006, we reported concerns about the Deepwater program in three main areas—improving program management, strengthening contractor accountability, and promoting cost control through greater competition among potential subcontractors. While the Coast Guard has taken some actions to improve program outcomes, the program still contains risks and we will continue to assess the Coast Guard's progress at addressing the outstanding recommendations.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO CAPTAIN KEVIN P. JARVIS

Question 1. Were there specific performance requirements for each major asset that allowed the Coast Guard to hold ICGS accountable? If not, how could the assets that ICGS was delivering be evaluated in terms of whether they met Coast Guard needs?

Answer. As part of the performance-based contract strategy, the Coast Guard was providing the contractor maximum latitude to develop the particular asset charac-

teristics that would deliver the needed "integrated" system performance attributes. With the exception of the National Security Cutter (NSC) which had specific performance requirements stipulated as part of the contract, each proposed asset from the contractor would have an accompanying, "performance specification" which would be delivered as a contract CDRL for Coast Guard review and approval. The concept was that this "performance spec" would be the contract document which would assure the Coast Guard the needed tool for holding the contractor accountable. Unfortunately, the original version of the "performance spec", provided as part of the contractor's proposal, was revised with (G–D) IPT approval as the asset's capabilities matured such that the required performance spec now aligned with the delivered asset capabilities. This process of continual specification adjustments to meet asset delivery realities was contrary to the contract's original premise of having an asset built to an established performance specification; not the other way around. Examples of this contorted process are most evident with 123′ WPB performance specification revisions and their related time-lines.

Question 2. Captain, I am concerned with the fact that the Coast Guard has reinterpreted the performance requirements for the NSC. Did this also occur with the 123′ conversion or any other vessel assets?

Answer. Many of the NSC performance requirement modifications can correctly be tied back to 9/11-induced increases in needed performance and capability. The same can not be said for, or honestly justify the 123′ WPB performance specification modifications. In my opinion, the 123′ specification reinterpretation efforts were the results of realized performance, capability and anticipated cost induced gaps that could be conveniently closed by adjusting the performance specification. This method of adjusting the performance specification for an assortment of reasons existed with other assets as well.

Question 3. The Department of Homeland Security's Inspector General is today releasing a report that concludes that ICGS, on several occasions, willfully and knowingly deviated from contractual obligations in modifying the 110′ patrol boats. Is this conclusion surprising to you?

Answer. As of this date I have not read the DHS IG report on the 110′–123′ patrol boat modification. That said, I would not be surprised with their conclusions since I was continually voicing "contract accountability" concerns as the program "ruthlessly executed" the contract. The 100′–123′ modification process is filled with many examples of convenient contract interpretation and decisions that continually frustrated G–S and MLC naval engineers.

Question 4. Why do you think it took so long for the concerns of the Coast Guard's own engineering experts to be heard?

Answer. I don't know and it was one of the most frustrating circumstances I've ever experienced in my Coast Guard career! That said, the G–D leadership was very comfortable with their complete reliance on their "outsourced" and "industry" provided engineering inputs. The continual rhetoric from the entire G–D staff concerning this position stalled any opportunity to equally and fairly assess the Coast Guard engineer's technical recommendations and warnings. By categorizing G–S input as "too cautionary" and "obstructions" to project schedule completion, G–D was able to discount many G–S assessments. Why this obvious G–D position to "outsource" and trivialize the G–S technical efforts was so successful with the remainder of the senior Coast Guard leadership is still a great mystery to me.

Question 5. I understand that unlike traditional procurement, under the Deepwater project, ICGS was supposed to bear greater responsibility for sustainment of the assets it was delivering. Was this your experience?

Answer. The contractor's proposal included not only greater responsibility for maintenance and sustainment of their new assets, but also the expectation of needed sustainment initiatives for the "to be replaced" Coast Guard legacy assets. ICGS first delivered surface asset, the 123′ WPB had a poorly integrated and almost nonexistent maintenance and logistic sustainment plan. Although the G–S organization recognized this ICGS sustainment gap and offered a "logistic bridging strategy" until theirs matured, it was not accepted by IGCS and ultimately the G–D program. In addition to the 123′ WPB structural failures, the ICGS inability to logistically sustain the planned 123′ operational profile contributed to the eventual failure of 110′–123′ modification part of the "system-of-systems" concept. As for the ICGS "legacy" sustainment commitment to the Coast Guard, it only materialized after significant senior level pressure and high visibility material needs for both the surface and air legacy assets. On the surface side of the ledger, the 270/210 MEP and the 110 MSA projects were not funding sustainment responsibilities the ICGS elements or G–D program elements willingly accepted or promoted. At the time of my departure from the Coast Guard, there still existed significant risk with the ICGS NSC

logistical support plan. Many requests for supply chain process details were never answered by ICGS logistical elements. The absence of any established "sustainment process" for the NSC is currently a major problem that has only recently received appropriate attention.

Question 6. Captain, does the Coast Guard have the ability to supply any capabilities, such as logistics, themselves rather than relying on ICGS?

Answer. The Coast Guard has a very flexible, talented and proven engineering, logistics and maintenance sustainment capability for its surface, air and C^4ISR assets. This capability and expertise exists at their ELC, AR&SC, TISCOM and C2CEN Centers of Excellence in addition to their MLC organizational infrastructure. From the beginning of the Deepwater contract, the remainder of the Coast Guard tried to leverage this proven technical expertise and capability as a value add to the program and ICGS to no avail.

Question 7. Do you think that the Coast Guard could obtain the assets it needs through a more traditional contract, instead of the current "integrated" ICGS approach?

Answer. Yes. Although the Coast Guard has never been faced with such a large asset replacement program in the past, I firmly believe Coast Guard directorate personal can be organizationally blended under the guidance of the SAM to achieve superior asset procurement and integration results.

Question 8. What was "integration" supposed to mean, and in your opinion, has it panned out?

Answer. My expectation of integration was a carefully constructed strategic and tactical execution process by which each delivered asset would to the greatest extent possible, leverage commonality and interoperability of their technical development processes, material supply chain elements, operational capabilities, workforce support infrastructure and training concepts. Although it is still relatively early in the overall ICGS Deepwater timeline and this may indeed become a reality, to date this level of integration is painfully absent.

Question 9. The recent Defense Acquisition University report notes that the Coast Guard is taking steps to address internal management issues and structures. Do you believe that such steps alone are enough to address the problems that have arisen with the Deepwater program?

Answer. As a "quick look" report, the DAU assessment is a great start. As of this writing, I am unaware of the referenced *Blueprint for Acquisition Reform* details, and how they address the organizational realignments necessary to ensure a "proper" balance exists between the Coast Guard's operational, technical, resource and acquisition staffs and their initiatives. As crippling as the Deepwater program's strategic and tactical execution errors were, it was their overly friendly relationship with the contractor and their seemingly purposeful and planned corruption of proven organizational roles, responsibilities and relationships that doomed any possible positive program results. It is here where the DAU report only scratches the surface.

Question 10. Do you think the Lead Systems Integrator approach is bringing an extra value or cost savings?

Answer. No. I firmly believe the Coast Guard has the needed "integration" capability with a much better "value add" metric.

Question 11. The rationale that the Deepwater office gave for proceeding with the NSC despite Admiral Brown's concerns was that to delay would result in costs to the project due to the fact that "long lead-time materials"—including some pretty major items such as engines—had already been put into place. Does this mean that the Coast Guard had already issued an order for Northrop to begin work on this project *before* the Coast Guard even authorized the design?

Answer. On March 19, 2003, the Coast Guard signed the delivery task orders (DTO) which authorized the ordering of NSC long lead-time materials (LLTM) and commencement of contract and detailed design. The alignment of these two DTO's is not uncommon since many critical hull characteristics and key internal components, some of which are long lead times materials, are identified and typically acknowledged as building sequence steps leading up to the "contract and detail design" step. The significance of these dates, their relationship to when NSC structural designs concerns were raised by G–S Naval Engineers and the rational of using LLTM delays to the Admiral Brown memo is indeed troubling. Almost from the award of the Deepwater contract in June 2002, G–S engineers utilized the IPT process to identify, discuss and try to resolve what would eventually become "independently verified" structural design concerns with the NSC. During the months June through October 2002, the G–S elements at virtually every IPT level docu-

mented concerns with the "functional design" and recommended a series of "mitigation" steps to reduce the risk while the NSC was still in the "electronic design" phase. Our collective concern was to address and mitigate these concerns prior to cutting any steel. In the Fall of 2002, a Flag level presentation with G–D (the Coast Guard Deepwater program manager), G–S, G–O and elements from ICGS and the ELC present, officially raised the engineering concerns to the Flag Level. Concurrently, these concerns were also documented at the 0–6 level indicating our opinion that the NSC design wasn't ready to progress through subsequent contract approval steps. In spite of these concerns and continual risk discussions, no collaborative corrective steps were accomplished within IPT structure. The design moved forward and the LLTM and contact/detail design were awarded. From the award of these DTOs to the "production readiness review" (PRR) and the ultimate NSC construction build authorization (awarded June 20, 2004), G–S engineers undertook a series of independent engineering analysis steps to add yet additional credibility to our findings and recommendations. The contract completion of this independent analysis was specifically established to coincide weeks before the planned PRR. It was because of this timing and the formality of Admiral Brown's approval and the forwarding memo on March 29, 2004, to G–D, we hoped to have one last chance to make the necessary design changes before the DTO was signed by G–D to authorize ICGS to commence building the NSC. The facts indicate that even this additional verification had little effect on the NSC advertised delivery schedule. Because of these past schedule-driven practices, for the program to now use LLTM as the rational for project delay costs associated with proceeding with NSC construction seems unjustified. After all, the official authorization to actually start building the NSC didn't occur until almost 3 months later. I concede that there could be some increased costs and delays if the program acted now, almost 18 months after G–S first identified their concerns, but at least it would still be before any authorization to cut steel was approved by the Coast Guard. To my knowledge G–S was never provided or shown any details as part of a cost analysis comparing possible delay costs with possible engineering corrective costs after delivery of the NSC.

Question 12. A traditional procurement allows the Coast Guard to set detailed specifications and requirements. With Deepwater, the Coast Guard set its performance requirements and ICGS has the freedom to suggest what products it should buy or design to meet those requirements. Isn't that approach risky and open to a high degree of disagreement?

Answer. A performance-based contract versus the traditional approach with government provided details and requirements could be deemed more risky. But by using a careful balance of traditional contract and performance contract elements, the risk could be mitigated to an acceptable level. The placement of this balance point was a continual source of disagreements with this contract. Many G–S technical details and requirements originally provided were deemed too prescriptive by the industry teams and obviously the G–D staff. As a result, they were eventually removed and the contract balance point shifted to a decidedly greater performance-based contract. This in turn set-up future friction points where G–S engineers evaluated the technical merit of ICGS deliverables and determined a number of performance gaps with the various designs. Because of the nature of the contract and the unhealthy reliance on the contractors engineering input by the G–D staff, these early G-S performance assessments would have to await the actual delivery of the specific asset to test or prove its performance capability. The performance results of 123′ WPB speak loudly on the risks of performance contracts that go unchallenged early in the design phase.

Question 13. Isn't that what's happening now, with the National Security Cutter?

Answer. Yes. G–S-projected NSC performance gaps will not be validated until delivery and acceptance trials are completed. Our point continues to be that once founded, these gaps may be either too expensive or feasibly impossible to correct. Do we then accept the asset with these flaws, or is the contract mechanism strong enough to establish damages against the contractor? The early unresolved disagreements associated with this performance-based contract will result in difficult times answering the previous question.

Question 14. In your testimony, you state that "the NSC is getting closer to an operational status with many of the needed logistical support details and deliverables still ill-defined". Is there a problem with the logistical support that ICGS is supposed to supply?

Answer. Yes! After 5 years of contract life, millions of dollars expended on the ICGS analysis of Coast Guard logistic and maintenance practices, promises of robust supply chain processes, performance-based contracts and responsive logistic delivery systems, the Coast Guard has yet to see any real details which support the ICGS

claims. With this reality and the dismal logistic support capability for the 123′ WPB, for the last year of my Coast Guard career, we were developing the strategy and tactics needed to implement an executable Coast Guard logistic plan to support the NSC in anticipation of an ICGS failure to support NSC1. Using past Coast Guard major acquisitions and a similar delivery reference point to that of the NSC, a bulk of the provisioning technical documentation, equipment spares, support plans and organizational policies and practices would have already been in place. This logistic performance gap is as severe, if not more so than the various ICGS-delivered design deficiencies.

Question 15. Can you tell us why you think we are in situation we are in with respect to the 123′ patrol boats?

Answer. In my opinion, the 123′ situation resulted from a number of avoidable factors. Mostly significant of these was the poorly crafted organizational relationship whereby the Deepwater program placed a greater trust and confidence in their own contractors and the ICGS engineers rather then the Coast Guard's own proven, unbiased technical and logistic experts. Add to this, a performance-based contract with relatively few established technical requirements, even fewer efforts to mandate thorough reviews of established contract deliverables, and finally a schedule that was "ruthlessly executed" by all G–D elements. Collectively, these integrated factors turned old, but economically repairable 110′ WPBs, into new structurally compromised non-operational 123′ WPB hulks.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. DANIEL K. INOUYE TO CAPTAIN KEVIN P. JARVIS

Question. Captain Jarvis, your background as the former Chief System's Deepwater Integration Officer and Engineering and Logistics Center Director puts you in a unique position to have very informed views on the best way to fix the current problems with the Deepwater program. What are the most significant changes that you think the Coast Guard should make to get the program back on track?

Senator Inouye, I offered a number of un-prioritized corrective recommendations as part of both my written and oral testimony. I also indicated that many of Admiral Allen's current Deepwater-related actions and initiatives will do wonders in getting the Deepwater program back on an even keel. Along with his establishment of the G-S directorate as the Coast Guard's "technical authority" for all engineering-related issues, the following are the most significant changes that I believe need to take place. First, greater contract accountability, visibility and contractor oversight is an absolute must. I suspect this will require a certain amount of restructuring with the existing contract, but in the long run, it should help avoid a duplication of these first disastrous 5 years. Second, the Coast Guard should be enabled to contract directly with asset builders, and the G–S cutter certification matrix should be incorporated as the basis for needed technical building requirements and standards. The System Integrator, in my opinion has not proven his worth. Third, the current Coast Guard engineering and logistic infrastructure should be given first priority to logistically sustain and maintain its fleet; it has the capability and expertise. Only if a "real" cost benefit analysis proves that an outsourcing option provides a better result should the Coast Guard capability be assessed for replacement. Concurrent with any outsourcing decision, extreme care needs to be taken to ensure that only distinct "outsourceable" elements are identified and that the entire Coast Guard capability isn't compromised by piecemeal outsourced operations. The remainder of my written recommendations can be implemented in any order.

RESPONSE TO QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO MR. PHILIP A. TEEL

Question 1. Mr. Teel, the list of problems with surface assets is long. The 123-foot patrol boat conversion failed and 8 Coast Guard patrol boats are now out of service; the design of the Fast Response Cutter has been found to be unsuited for Coast Guard's needs, and the National Security Cutter as designed will not achieve the Coast Guard's performance goals. Does Northrop Grumman bear any responsibility for these problems?

Answer. Northrop Grumman is wholly dedicated to the Deepwater Program and takes very seriously its contractual obligations to the Coast Guard. There is no single common factor associated with the aforementioned Deepwater issues. As such, the issues associated with the 123s, Fast Response Cutter and National Security Cutter are separately addressed below in more detail.

123′ Conversion

ICGS proposed the 123′ conversion as an appropriate means to provide the Coast Guard with the necessary capability to meet its mission objectives while remaining within the confines of the program funding requirements. During the initial Deepwater competition, offerors were required to propose a "system of systems" solution that did not exceed the funding limitation of *$500 million per year*. With new assets such as the National Security Cutter (NSC), Maritime Patrol Aircraft (MPA) and the Vertical Unmanned Air Vehicle (VUAV) being developed early in the program, it was not possible to design, develop and construct new patrol boats at program inception while keeping within those annual funding limitations. An interim solution was therefore proposed to modify the legacy 110-foot patrol boats to allow these modified vessels (converted to 123 feet) to satisfy many of the Coast Guard's patrol boat requirements until a new design could be fielded.

Our proposal to convert the 110′ vessels was based on information then available and known to us. Prior to proposal submission, Bollinger, our subcontractor and original builder of the 110s, reviewed Coast Guard surveys of major structural repairs performed on the 110 fleet. These surveys indicated that 110′ structural deficiencies, when present, were the result of corrosion and could be addressed by identifying and renewing corroded plating and structure. This information was consistent with a Coast Guard report, dated March 8, 2002, prepared by the 110′ WPB Emergency Service Life Evaluation Board (SLEB Report). The SLEB Report stated that the 110′ hulls were in deteriorated condition but that the periodic repair of hull plating would improve the readiness of the fleet. Consistent with the SLEB Report and the Coast Guard surveys, ICGS determined that replacement of thin hull plating would be sufficient to overcome the deteriorated condition of the 110s.

Following contract award, but before any conversion work began, the Coast Guard, ICGS, Northrop Grumman, and Bollinger conducted a Preliminary Design Review, Critical Design Review, and Production Readiness Review of the 123′ design and proposed conversion scope of work. During these reviews, ICGS and Northrop Grumman presented to the Coast Guard the engineering analyses and design approach for the 123′ conversion effort.

The 110′ vessels delivered for conversion were in worse condition than anticipated. While the worse than expected condition of the ships would require more replacement of hull plating, the Coast Guard, Northrop Grumman, and Bollinger did not believe that the viability of the conversion approach was in question.

Following the buckling on the MATAGORDA, a joint Coast Guard and Northrop Grumman tiger team discovered that the vessel had a *pre-existing* 110′ workmanship issue at the location of the hull buckling. Specifically, a hidden, unwelded aluminum deck stringer was discovered immediately beneath the area where the failure occurred. All eight 123s were examined, and an unwelded stringer was found on one additional hull undergoing conversion. When modeled using finite element analysis, the stresses in the panels which failed on the MATAGORDA were significantly higher than the stresses shown when the model was run with this stringer intact. Based on this finding, ICGS and the Coast Guard believed this to be the primary cause of the buckling on MATAGORDA, and repairs were made accordingly.

In an effort to further improve the structural integrity of the 123s, three stiffener bands were installed; one at the upper edge of the side shell, one below this one and another on the edge of the main deck to increase the overall structural strength. While the finite element analysis and conventional calculations both agreed that the original hull, with the stringer under the deck intact, should be sufficient throughout the expected operating range of the 123s, these additional stiffeners were considered to provide an added margin of strength. The three stiffener bands were added to all the 123s.

Northrop Grumman has been committed to and remains committed to identifying the root causes of the 123′ structural issues. After learning of the MATAGORDA buckling in mid-September 2004, Northrop Grumman immediately began a review of all available information and reports on the incident. Northrop Grumman formed a Tiger Team with the Coast Guard Engineering Logistics Center (ELC), Bollinger Shipyards, and ICGS to investigate the cracking and buckling problems that had occurred on this vessel during its transit run away from Hurricane Ivan. The Tiger Team investigation occurred between September 2004 and January 2005.

As part of the Tiger Team effort, Downey Engineering performed finite element analyses of the 123′, which modeled the converted hull. In addition to these analyses, Northrop Grumman performed hull girder section modulus calculations and longitudinal strength calculations. Despite these extensive analyses and calculations, the Tiger Team was not able to correlate the problems actually experienced on the vessel based on the reported sea states. Northrop Grumman also retained

Stress Engineering Services, Inc. to conduct metallurgical testing between August 2006 and February 2007. This testing revealed an issue on the main deck that exists on the 123s and across the entire legacy 110′ fleet. Northrop Grumman also collected data on shaft alignment and maintenance procedures both during the conversion and since, so that the procedures for checking and correcting alignment can be validated for both the 110′ and the 123′. Elements of the 123′ design, including the propellers and the stern-launch system, are being reexamined and validated.

The Coast Guard ELC commissioned its own finite element analysis, which at the time was not shared with Northrop Grumman. In February 2006 NGSS offered to perform a comprehensive engineering assessment at no cost to the Coast Guard. The Coast Guard declined the offer with the exception of some metallurgical testing. In early 2006, the Coast Guard ELC conducted additional testing and analysis on the 123s. Northrop Grumman was not provided an opportunity to participate in this testing. In fact, it was not until January 2007 that the Coast Guard began to share the test results with Northrop Grumman. Since that time, however, the Coast Guard is now sharing their test data with Northrop Grumman so it can be analyzed in conjunction with all of the other test data.

In summary, Northrop Grumman has assumed responsibility for working with the Coast Guard to understand the structural issues experienced on the 123s, and has devoted, and will continue to devote, significant resources to this effort well beyond our contractual obligations.

National Security Cutter

The Contract contains a 30-year service life requirement for the NSC and the vessel as designed will meet this requirement. As required by the contract, Northrop Grumman designed the NSC in accordance with proven U.S. Navy Design Data Sheets. In fact, the NSC design is structurally more sound than required under these Navy standards

The Coast Guard and Northrop Grumman agree that there is no safety issue or operational restrictions associated with the current NSC design. In his January 30, 2007 testimony before the House Subcommittee on Coast Guard and Maritime Transportation, Commandant Allen stated, "There has never been a question of safety related to the ship's structure, nor have we ever anticipated any operational restrictions related to its design." In addition, the American Bureau of Shipbuilding (ABS) has certified the structural design drawings of the NSC.

The discussions between Coast Guard and Northrop Grumman engineers on the NSC relate to *fatigue-life*. Unlike service life, fatigue-life is not a contract requirement. As discussed more fully in the response to National Security Cutter *Question 5* below, the Naval Surface Warfare Center—Carderock Division (Navy Carderock) performed an analysis of the predicted fatigue-life of the NSC using a model not benchmarked or based upon valid historical data and realistic operating conditions. When properly benchmarked, a 53.8 year fatigue-life is predicted for the NSC design. The differing fatigue-life analyses have resulted in a dialogue between engineers which will lead to a final determination on the need for any *enhancements* to further extend fatigue-life.

Although not required by contract, Northrop Grumman has undertaken the responsibility for working with the Coast Guard and Navy Carderock to achieve consensus on the predicted and desired fatigue-life of the NSC. Northrop Grumman has been involved in extensive analyses and dialogue with government engineers to resolve these issues to the satisfaction of the Coast Guard.

Fast Response Cutter

ICGS and Northrop Grumman originally proposed a Fast Response Cutter (FRC) with a steel hull design. Following contract award, substantial post-9/11 changes in the Coast Guard's mission and requirements resulted in a set of required capabilities that exceeded traditional patrol boat functions. As a consequence, the steel design originally proposed by ICGS and Northrop Grumman did not satisfy the new and expanded requirements of the Coast Guard. In addition, the Coast Guard accelerated the delivery requirement for the FRC by 10 years.

To meet the expanded post-9/11 requirements and accelerated schedule, Northrop Grumman conducted trade studies, the results of which indicated that a composite hull would significantly reduce the life cycle cost of maintenance and best serve the Coast Guard's new post-9/11 mission requirements. The Coast Guard then elected to pursue the composite approach with a design-to-cost limit. This design-to-cost approach became a "production cost cap" but without any requirements trade-offs being accepted by the Coast Guard. These design constraints resulted in a shortened vessel length and wider beam than traditional patrol boat hull dimensions. No exist-

ing patrol boat in the worldwide inventory could satisfy the Coast Guard's requirements set.

The Coast Guard and industry each conducted analyses of the FRC design and the best value approach for meeting Coast Guard operational requirements. Northrop Grumman is not aware of any Coast Guard determination that the FRC design is "unsuited" for the post-9/11 mission requirements. To the contrary, an independent study has confirmed the ability of the proposed FRC design to meet the challenging Coast Guard operational requirements.

Currently, the Coast Guard is sponsoring an independent business case analysis to determine if a steel or composite hull design is most cost effective. Northrop Grumman analysis has shown that the service life of a composite hull will be considerably longer than a traditional steel hull. While Northrop Grumman stands behind its FRC design, it will support the Coast Guard's ultimate decision in this matter.

Question 2. How is it that under this performance-based contract, Northrop Grumman has tremendous discretion in choosing and designing the assets needed to meet Coast Guard needs, and yet Northrop is not responsible for assuring that these assets actually work and perform to those needs?

Answer. ICGS does not "choose" the assets to be developed for the Deepwater Program. Instead, the Coast Guard makes the choices after considering ICGS proposed asset designs which, before they are chosen, are reviewed and approved by Coast Guard senior leadership through a series of cross-functional government teams. The Coast Guard is and always has been the decisionmaking and contracting authority for the Deepwater Program, and has retained traditional contract management functions, including the right to issue unilateral change orders, to stop or terminate work, to order or not order assets and supplies, and to accept or reject the work.

ICGS and Northrop Grumman are responsible for developing surface assets that comply with the performance requirements. Throughout the development phase, ICGS and the Coast Guard conduct reviews for each Deepwater asset. These programmatic reviews include a System Requirements Review, a Preliminary Design Review, a Critical Design Review and a Production Readiness Review, all of which are conducted with the Coast Guard before the actual conversion or construction work begins. Leading up to each of these reviews, the evolving design, design drawings and calculations are formally presented to the Coast Guard subject matter experts in increasing detail for their comment and approval. Assets are not constructed until the Coast Guard reviews and approves the design.

The Coast Guard is responsible for determining whether the surface assets meet applicable performance requirements. Before accepting delivery of each Deepwater surface asset, the Coast Guard conducts acceptance testing and sea trials with the assistance of third-party experts. For example, during the NSC inspection and acceptance process, ABS will certify 35 ship systems, including Command and Control Systems, Propulsion Plant, Machinery Monitoring and Control, Fuel Systems, Anchoring Systems, and Steering Systems. Indeed, prior to or in conjunction with the delivery of the NSC BERTHOLF, there will be a total of 46 independent third-party certifications. These independent certifications include Final Aircraft Facilities, Flight Deck Status and Signaling, Navigation Systems, Interior Communications Systems, Guns and Ammunition Weapons System Safety, DOD Information Security and Accreditation, and TEMPEST. The Navy's Board of Inspection and Survey will conduct the Ship Acceptance Trials for the NSC.

The contractual obligations of ICGS and Northrop Grumman do not end upon delivery of the surface assets. Rather, Northrop Grumman remains responsible after delivery for assuring that the Surface assets meet the contract requirements pursuant to its warranty obligations. For example, following the transfer to the Coast Guard, NSC 1 will enter a twelve month warranty period, during which ICGS will correct any deficient items or complete any contractor-responsible work. This one-year warranty period was specifically requested by the Coast Guard in the Deepwater Request for Proposals (RFP), and is common to the shipbuilding industry. Any defects in workmanship or materials provided by ICGS that occur within the warranty period are corrected by ICGS at its expense. The warranty extends to the proper installation of Government-furnished property and, in the event modification is performed on the Government-furnished property, also extends to such modification work.

Any failures attributable to legacy asset equipment in a conversion or upgrade program are corrected by the Coast Guard within their existing infrastructure. Failures to Deepwater equipment outside the terms of the warranty are addressed by the ICGS Lifetime Operations and Support organization as prioritized and funded by the Coast Guard. As in the case of the 123s, ICGS works cooperatively with the Coast Guard to address any problems with the ships regardless of whether these problems are within the scope of the warranty.

Question 3. Do you know of any examples in which ICGS, Lockheed Martin, or Northrop Grumman used the awarding of Deepwater subcontracts to industry partners as a means to leverage other potential deals or contracts for Lockheed Martin or Northrop Grumman?

Answer. No. Competition in the Deepwater Program is governed by a number of procurement rules patterned after the Federal Acquisition Regulation (FAR), and are designed to promote full and fair competition. ICGS, Northrop Grumman, and Lockheed Martin conduct competitions under the Deepwater Program pursuant to these FAR-based provisions. Northrop Grumman utilizes these competitive procedures to the maximum extent practicable. Awards are made on the basis of the best value for the Coast Guard and not on what is best for the contractors.

Subcontract procurement under the Deepwater Program is an open and highly transparent process. All Northrop Grumman purchases over $25K are individually reviewed for compliance with purchasing guidelines, and the purchasing system is audited (usually every 3 years) by the Defense Contract Audit Agency (DCAA). A government-sponsored third-party review of Deepwater acquisition practices found Lockheed Martin and Northrop Grumman subcontracting statistics to be favorable when compared to the statistics of Naval Air Systems Command and Naval Sea Systems Command. In addition, competition for subcontract awards is encouraged via the annual Industry and Innovation Days where suppliers and vendors have an opportunity to provide input on new or improved products. ICGS to date has placed orders with more than 600 suppliers representing more than 41 states and maintains an active database of over 3,000 potential suppliers from which it draws to host annual supplier Industry and Innovation Days.

Proposals from affiliated companies are judged no differently than other proposals. For example, the Unmanned Air Vehicle subcontract was awarded to Bell Textron, not Northrop Grumman, and the Maritime Patrol Aircraft went to CASA, not Lockheed Martin. Recently, the Coast Guard has changed the FRC acquisition strategy to include two paths: FRC–A and FRC–B. The ICGS FRC–B team will recommend to the Coast Guard a candidate design from a competitive field of worldwide patrol boat providers and is expected to enter concept design later this year. Northrop Grumman will not submit its own FRC–B design proposal.

Through December 31, 2006, Lockheed Martin and Northrop Grumman awarded 73 subcontracts with values above the FAR threshold (which recently changed from $550k to $650k). The cumulative value of the 73 awards is $788M. Of the 73 awards, 81 percent were awarded either competitively or in accordance with a FAR exception to competition. In terms of dollars, of the $788M, 85 percent was awarded either competitively or in accordance with the FAR exceptions to competition. Of the 1,335 purchase orders issued since program inception, 32 were made to Northrop Grumman affiliates comprising 11.5 percent of the total subcontracted dollars.

Question 4. I understand that engineers often disagree about specifics of a given design, but can you please explain why Northrop Grumman continues to believe that the NSC meets the requirements of the contract—despite the findings to the contrary of the Coast Guard's own experts and three independent studies conducted by well respected naval engineers?

Answer. Northrop Grumman continues to believe that the NSC meets the contract requirements. The issues that have been raised between the engineers relate primarily to an *extra-contractual matter: fatigue-life.* Both the Coast Guard and Northrop Grumman agree that there is no safety issue related to ship structure (also see the related testimony on Page 78). Nor are there any operational restrictions associated with the current NSC design. The NSC structural design meets the 30-year service life requirements of the contract and has been independently certified by ABS.

The question currently being addressed by Northrop Grumman and the Coast Guard involves the fatigue-life of the NSC over its 30-year service life. Fatigue-life and service-life are two different concepts. Fatigue-life refers to the amount of time prior to the onset of cracks in structurally significant elements in the vessel. When cracking occurs, appropriate repairs are performed. While some degree of cracking is expected during the life of a vessel, determining the length of time between ship delivery and the onset of cracking is not an exact science. Service life, in contrast, is the amount of time in which repairs of cracks and other conditions in the vessel remain economically viable to perform in order to keep the ship in service.

Northrop Grumman and Navy Carderock have used a relatively new method to model the predicted NSC fatigue-life by applying different approaches to existing ship designs, operational characteristics and hull form. The difference in the two approaches relates to whether the model is benchmarked using historical data from ships that have operated in a known or defined sea state. The Navy Carderock performed their fatigue analysis by assuming that the NSC would spend 100 percent

of the time in specific locations known for very bad weather conditions. Based upon "real-world" operational experiences with naval vessels, the NSC will encounter a variety of sea states, as defined in the Contract.

Many of the structural issues raised by the Coast Guard during the design phase have been resolved as part of the design process. For example, Northrop Grumman has made enhancements to address Coast Guard structural concerns with the design of the ship bottom. Northrop Grumman has added structural enhancements to the ship superstructure and superstructure re-entrant design in response to Coast Guard concerns, and has further addressed structural issues raised by the Coast Guard by using reduced penetrations in the deck stringer plates and reinforced those that were still required using Navy fatigue guidance criteria. The structural changes have been incorporated into the NSC 1, the BERTHOLF, and are part of the baseline design.

To the extent the ongoing discussions with the Coast Guard result in the Coast Guard requiring *fatigue-related* structural enhancements, those enhancements will be provided consistent with Coast Guard requirements.

Question 5. Isn't it the case that ICGS proposed the "230 underway days" standard as part of its winning Deepwater solution that was accepted by the Coast Guard? Why is there any confusion about this standard now?

Answer. There should be no confusion about the "days underway" requirement for the NSC. ICGS did not propose a standard that the NSC be "underway" for 230 days a year. The performance specification and concept of operations documents proposed by ICGS stated that the ship must be capable of "230 Days Away From Homeport." This translates to 185 days at sea (165 mission days and 20 average transit days) and 45 in port logistics days away from homeport.

In particular, the NSC operational profile is contained in the NSC performance specification and includes approximately four, 60 day patrols per year. These encompass 230 days away from homeport each year. After every 9–12 patrolling days, a mid-patrol break of three to 4 days is scheduled for crew rest. Brief stops for fuel of a single day or less may be taken according to operational needs and proximity to a fueling location. These rest and reprovisioning standards are scheduled to balance out the breaks during the patrol, optimizing stores levels with operational needs. The 60 day patrols contemplate eight transit days, 12 in-port logistics days and 40 operational mission days, for a total of 185 underway days per year.

The Coast Guard and Northrop Grumman are in agreement on this issue. Commandant Allen stated in his testimony before this Subcommittee: "But, by the contract, it is 230 days away from home port, 185 days on station, conducting mission, and that is the parameters by which the models are applied for how long the sea stay [*sic,* state] would act on the hull for the purpose of determining the fatigue-life."

Question 6. Didn't the contract state that the 30-year life of the ship was based on an assumption of 230 days underway?

Answer. As discussed above, the 30-year *service life* of the ship was based on an assumption of 230 days away from homeport, not days underway. The "30-year life" requirement does not pertain to *fatigue-life.* As discussed above, fatigue-life refers to the amount of time prior to the onset of cracks in structurally significant elements in the vessel, while service life is the amount of time in which repairs of cracks and other conditions in the vessel remain economically viable to perform in order to keep the ship in service.

In determining fatigue-life, the controlling assumption is the amount of time the vessel spends in extreme sea states, not total days underway. This assumption forms the basis for the differing engineering predictions of fatigue-life.

Question 7. Do you believe that the National Security Cutter meets the requirements of the contract?

Answer. Yes. As stated previously, the NSC was designed in accordance with contract specifications. We have worked and will continue to work with the Coast Guard to resolve the open issues, and we continue to stand behind the design and construction of the NSC and its ability to meet service life and operational performance requirements of the contract.

Question 8. Why do Northrop Grumman and the Coast Guard disagree on whether the design meets even the lower performance requirement of 170–180 days underway?

Answer. As stated previously, the requirement for 185 days at sea is not a "lower" or "relaxed" performance requirement. The Coast Guard and Northrop Grumman have no difference of opinion on the service life of the NSC. Indeed, in his January 30, 2007 testimony before the House Subcommittee on Coast Guard and Maritime Transportation, Commandant Allen explained, "the issue here . . . is a question of

fatigue-life over the course of the cutter's 30-year service life." The disagreement regarding fatigue-life revolves around assumption of sea state conditions, not days underway.

When the model is calibrated in accordance with Navy fatigue-life guidance instructions, and realistic real-world sea state conditions, the NSC fatigue-life is predicted to be nearly 54 years. We will continue to work and resolve this issue with the Coast Guard.

Question 9. Although your testimony indicates that the NSC was built to Navy specifications, the Coast Guard is not the Navy, and has different operating needs. Did you take that into consideration when designing the NSC?

Answer. Yes. The NSC was designed and built to meet Coast Guard, not Navy, mission needs. In the RFP, the Coast Guard included performance specification requirements for the NSC that reflected existing operational needs. The Coast Guard performance specifications required Northrop Grumman to design and construct the NSC in accordance with the Cutter Specific Certification Matrix (CSCM). The NSC CSCM did not impose any new or additional operational requirements, but provided the standards for verification that the performance requirements are met.

The CSCM contained Design Data Sheets, which are widely accepted within the shipbuilding industry as the "traditional approach" to design and build ships. For decades, the Design Data Sheet approach has produced successful designs over a wide range of vessels. This approach implies an acceptable fatigue-life and long-term ship performance based on a reasonable level of maintenance. Northrop Grumman has used the Data Design Sheet approach in the design of numerous Navy vessels. Although the Data Design Sheets are commonly used for Navy vessels, they are not "Navy-only specifications." Nor do they substitute Navy operational requirements for Coast Guard operational requirements.

Question 10. In your opinion, is the disagreement simply a communications failure between Northrop and the Coast Guard?

Answer. Certainly some of the issues associated with the Deepwater program are a result of communications issues. For instance many of the issues identified in the DHS IG report relate to poor communications between Coast Guard functional organizations such as the Engineering Logistics Center and Requirements organization and the Deepwater program team. Management of the ICGS contract is handled through the Deepwater program office and the functional organizations do not feel that their issues are adequately represented through the Deepwater program. Issues remain unresolved for long periods and, in some cases, even when resolved contractually (between ICGS and Coast Guard Deepwater program), are not accepted as resolved by the functional organizations.

The recent steps announced by Admiral Allen to re-align functions within the Coast Guard to provide greater oversight and responsiveness to address procurement management and technical issues will certainly address many of the Deepwater acquisition issues. This approach will yield benefits and significantly enhance the ability of the Deepwater Program to deliver the assets and support our Nation's needs to address post-9/11 mission requirements.

Several weeks ago, Commandant Allen met with Northrop Grumman CEO Ronald Sugar and Lockheed Martin CEO Robert Stevens in the first of a planned series of meetings to discuss near and long-term objectives and goals for the Deepwater Program. As an outcome, ICGS and the Coast Guard recently developed a Statement of Strategic Intent to provide a management framework for developing the way forward on the Deepwater Program. In addition, the Statement of Strategic Intent is intended to clarify the roles the Coast Guard and ICGS in performance of the Deepwater mission. ICGS will be responsive to the changes requested by the Coast Guard.

Question 11. Mr. Teel, the only 110-foot patrol boats to experience significant hull cracking, buckling and other problems that have led Admiral Allen to take them out of service are those that your company modified into 123-foot vessels. Yet, you claim that the fault lies with the Coast Guard and not with your company. How can that be?

Answer. It is incorrect that only the 123s have experienced hull cracking and buckling that have restricted operational effectiveness. Hull cracking and buckling remains a recurring issue for the 110 fleet. By 2001, the Coast Guard recognized that hull cracking and buckling presented a fleet-wide problem, and identified the need to undertake a comprehensive Hull Sustainment Program in order to maintain existing operational hours. Similarly, repairs of deck cracks on the aging 110′ vessels became commonplace. The Coast Guard SLEB report, issued in 2002 before the eight patrol craft were converted, further recognized the deteriorated condition of the 110′ hulls and recommended the comprehensive repair of hull plating to improve

the readiness of the fleet. For example, the SLEB report identified four 110s requiring repairs for buckled hull plating. The Coast Guard has confined the 110s to restricted operations due to fleet-wide structural problems. The cost of this Hull Sustainment Program was estimated at approximately $7 million per vessel. The Deepwater proposal to convert the 110 fleet at $8 million per vessel involved a similar hull plating replacement approach, but also included a new deck house, stern launch boat ramp, improved berthing quarters, and a fully integrated C^4ISR system.

A Coast Guard memorandum dated March 14, 2003 also noted the deteriorated condition of the 110′ hulls. Based on the SLEB Report and a continued pattern of emergent casualties, the memorandum requested that the Deepwater Program Executive Office develop a plan to address hull sustainment deficiencies.

In short, the 123s are not the only vessels to experience hull buckling and cracking. Moreover, Northrop Grumman does not "claim that the fault lies with the Coast Guard" for the 123s. Northrop Grumman is working collaboratively with the Coast Guard to identify and resolve the cause(s) of the cracking/buckling. Until this work is completed, it would be premature to judge or assign fault.

Question 12. Didn't Northrop have an opportunity to inspect the 110-foot cutters before it presented the solution of extending these to 123 feet?

Answer. While no opportunity to examine the 110′ vessels was offered by the Coast Guard prior to contract award, Bollinger was permitted to inspect the 110′ cutter FARALLON after contract award. This inspection did not call into question the viability of the conversion approach, but instead confirmed the approach. The SLEB Report prepared by the Coast Guard involved a complete review of the 110 fleet, confirmed the belief that the 110′ structural deficiencies could be addressed by renewing corroded plating and structure. In fact, the SLEB Report made reference to the upcoming 123′ conversion effort, which would utilize the hull repair approach recommended by the SLEB.

Question 13. After the first converted boat, the MATAGORDA, developed a major hull crack, did Northrop conduct a thorough structural review of the other seven 110′ cutters before it modified them?

Answer. As discussed above, following the buckling of the MATAGORDA, an engineering tiger team was formed consisting of Coast Guard and Northrop Grumman personnel. This team was dispatched to investigate the problem and discovered that the MATAGORDA had a legacy workmanship issue in an unwelded 110′ deck stringer that existed prior to the conversion and contributed to the hull buckling.

The MATAGORDA issue arose in September 2004, after all 8 hulls had entered the conversion program and the first 4 hulls had been delivered. All 123s, including delivered vessels and vessels undergoing conversion, were examined, and an unwelded stringer was also found on one additional hull undergoing conversion.

When modeled using finite element analysis, the stresses in the panels which failed on MATAGORDA were significantly higher than the stresses shown when the model was run with this stringer intact. This indicated that the structural integrity of the 123′ hull was satisfactory and that the primary cause of the MATAGORDA buckling was a 110′ legacy workmanship issue unrelated to the structural design.

Although the MATAGORDA buckling was believed to be a pre-conversion workmanship issue, Northrop Grumman and the Coast Guard proactively evaluated methods to enhance the 123′ structure. To further improve the structural integrity of the 123s, Northrop Grumman (working with Bollinger) and the Coast Guard installed three stiffener bands on all eight ships; one at the upper edge of the side shell, one below this one and another on the edge of the main deck to increase the overall structural strength. While the finite element analysis and conventional calculations both agreed that the original hull, with the stringer under the deck intact, should be sufficient throughout the expected operating range of the 123s, these additional stiffeners were considered to provide an added margin of strength. The three stiffener bands were added to all the 123s and both Northrop Grumman and the Coast Guard believed that any structural issues would be overcome by the additional structural reinforcement.

Question 14. Why did Northrop Grumman award itself the design for the Fast Response Cutter? GAO found that Northrop did not have any significant experience in designing such a cutter. Is that accurate?

Answer. Northrop Grumman did not "award itself the design" for the FRC. The ICGS proposal selected by the Coast Guard identified Bollinger as the designer and builder of the FRC. With the advent of new post-9/11 mission requirements and the acceleration of the FRC acquisition by 10 years, the original proposed FRC design approach was modified (with Coast Guard approval) from a steel to composite hull. The composite hull was then proposed following a business case analysis, which

showed substantial savings resulting from not having to replace the hull for 35–40 years.

Unlike other domestic shipyards, Northrop Grumman has both prior composite shipbuilding experience and experience in the design and construction of vessels comparable to the FRC. During the mid-1990s, Northrop Grumman constructed four composite 188-foot U.S. Navy mine-hunting vessels at its Gulfport Facility, where the composite FRC vessels were to be constructed.

Northrop Grumman also has designed and built composite products for marine applications. The Navy mine hunters were constructed of composite materials and built to very demanding specifications. The Navy vessels were shock rated and incorporated special features to meet stringent noise criteria requirements. The vessels are still in the U.S. Navy fleet today. In addition, the Advanced Enclosed Monitoring/Sensing (AEM/S) System constructed by Northrop Grumman and installed on the USS RADFORD involved composite materials for weight reduction, reduced signatures and an overall decrease in maintenance requirements. The AEM/S led to the development of the large composite mast for the LPD class ships currently under construction by Northrop Grumman. Moreover, Office of Naval Research (ONR) programs performed by Northrop Grumman, such as the Composite Helo Hangar, helped develop design and construction techniques for numerous applications, including the all-composite DDG 1000 topside structure and the CVN 77 composite mast. The Composite High Speed Vessel (CHSV) program, sponsored by ONR, demonstrated readiness and acceptability of an all-composite high-speed naval vessel.

In short, Northrop Grumman possesses considerable expertise in the design and construction of composite vessels similar to that proposed for the FRC and has thoroughly validated the use of composite technology for marine vessels.

Question 15. You seem to attribute the problems with the Fast Response Cutter to the Coast Guard demanding too many capabilities, but wasn't Northrop responsible for the design?

Answer. Northrop Grumman is responsible for *designing* the FRC in accordance with the *requirements* established by the Coast Guard. An updated and new set of Coast Guard post-9/11 capabilities combined with a design-to-cost cap resulted in a non-traditional hull form outside customary hull dimensions in legacy patrol boats. An independent analysis of the FRC preliminary design confirmed that the non-traditional hull form was driven by post-9/11 requirements, including enhanced stability, a 3,000 hour annual OPTEMPO, a 50 square foot/person gross area, a 25 percent Search and Rescue and Operations fuel margin, and a 30 percent electric power margin for future growth.

A series of business case analyses, total ownership cost studies and preliminary design efforts showed the benefits of using a composite hull design to meet this demanding set of requirements with a potential to save over $1B in lifecycle costs.

An independent third-party analysis also confirmed that Northrop Grumman's FRC design appears to meet or is capable of meeting all of its design and performance requirements. Northrop Grumman does not believe that FRC design is invalid because the Coast Guard has "demand[ed] too many capabilities." Rather, the nature and extent of the post-9/11 requirements exceeded typical patrol boat practice for ship size and displacement and led to a non-traditional ship design. Northrop Grumman believes the FRC design, while non-traditional, is sound and meets Coast Guard requirements.

Question 16. The Commandant has now made a decision to compete the design and the build of the Fast Response Cutter—but only years after your company set out to design it yourself. What exact steps did you take to consider the merits of competing either the design or the construction of this vessel?

Answer. To our knowledge, the Coast Guard has not decided to compete the design and construction of every type FRC that it may procure. Rather, the Coast Guard has decided only to conduct a competition for a limited number of FRC–B vessels which will function as an interim measure until the *fully* capable FRC (FRC–A) can be fielded. The FRC–B, which will be based upon an existing patrol boat and based upon Coast Guard and industry surveys, will not satisfy many of the Coast Guard's requirements.

As stated previously, Northrop Grumman did not intend or originally propose to design the FRC itself. Northrop Grumman originally proposed that Bollinger would design and construct the FRC with a steel hull. The Coast Guard accelerated FRC design and construction by 10 years. The expanded post-9/11 requirements produced a set of required capabilities that exceeded the existing roles filled by the 110s and 123s and other worldwide patrol boat fleets, and led to the consideration of a new design based upon a composite hull design. Having marine composite experience,

Northrop Grumman proposed and the Coast Guard agreed to proceed with a composite vessel.

The current patrol boat acquisition strategy includes two paths to address the patrol boat mission hour gap in light of the acceleration of the FRC. In the near term, FRC–B (interim) will be awarded through a competitive acquisition process. Northrop Grumman will not be competing for the FRC–B design work and the Coast Guard will approve the ultimate source selection decision. In the long term, the Coast Guard will decide whether and when to issue a Delivery Task Order to procure a fully capable FRC–A.

Question 17. How does Northrop decide whether to go with an originally-planned asset or look for alternatives that might lead to a competition?

Answer. By way of relevant background, ICGS submitted a proposal in the initial and current phase in competition against other industry teams. Our proposal contained discrete CLINS (Contract Line Items) for assets and services, the execution of which were proposed with a schedule and a cost. The Coast Guard converted the proposal to a contract which contained a schedule and costed CLINS for these assets. Work under the CLINS could be (and has been) ordered by the Coast Guard through their issuance of Delivery Task Orders to ICGS. Thus, the Coast Guard selected ICGS's competitive solution. Further, the Coast Guard, not Northrop Grumman, makes all decisions about whether to execute Delivery Task Orders or to consider other alternatives. For example, in the case of the FRC, the Coast Guard accelerated the delivery schedule by 10 years and imposed a significantly different set of requirements. As there was not a "proposed solution" in the contract which fit the Coast Guard's new requirements, Northrop Grumman looked both internally and externally for appropriate solutions and then presented a solution to the Coast Guard for consideration.

Northrop Grumman has in place a detailed set of procedures governing "make-or-buy" decisions, and strictly follows these procedures under the Deepwater program. The "make-or-buy" procedures require consideration of, among other things, the effect upon price, quality, delivery and performance of the prime contract, competency, expertise and capability available within other firms, requirements for enhancing competition by broadening the base of potential competitors, and the opportunity for small business and small business concerns to compete for subcontracts. As Admiral Allen said in his January 30, 2007 testimony before the House Subcommittee on Coast Guard and Maritime Transportation, "They [ICGS] deal with hundreds of vendors around the country and we'd be glad to make that available for the record, sir, including what work was directed to either Lockheed or Northrop Grumman. That is all transparent, sir."

Question 18. You have testified that the Fast Response Cutter did not fail a "tank test" that was conducted. But this is not the only design problem found by the Coast Guard and an independent review. Do you still think the Fast Response Cutter design that Northrop supplied is the right design for the Coast Guard?

Answer. As stated previously, Northrop Grumman believes that the FRC design provides the most cost effective means to meet the requirements imposed on the vessel following 9/11 and contract award. The "design problems" largely center on the fact that the hull form of the FRC is outside typical patrol boat parameters. This non-traditional design was necessary to address the post-9/11 requirements that no existing patrol craft design was capable of satisfying. In particular, the FRC design contains a wide beam, which is driven primarily by demanding stability requirements subsequently relaxed for FRC–B. In addition, the FRC designed by Northrop Grumman includes a four engine propulsion plant, which was necessary to meet speed requirements while remaining within applicable design to cost constraints.

The Coast Guard is reviewing FRC–B requirements based on an assessment by Alion-JJMA Science and Technology. We will support the Coast Guard's ultimate decisions in this regard.

We agree with the independent third-party analysis by John J. McMullen and Associates regarding Northrop's proposed FRC design: "The review team believes that the FRC does appear to meet or is capable of meeting the requirements" and acknowledges that "[t]he FRC preliminary design represents a design solution to a challenging set of requirements."

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUYE TO PHILIP A. TEEL

Question 1. The Department of Homeland Security's Inspector General concluded that the current design of the National Security Cutter will not meet contractual performance requirements. The modernization plan for the 110-foot patrol boats has resulted in eight ships that are now out of service, and Northrop Grumman has not produced a functional design for the Fast Response Cutter yet. Why has it been so difficult to deliver the assets that you outlined in your original proposal?

Answer. Northrop Grumman is wholly dedicated to the Deepwater Program and takes very seriously its contractual obligations to the Coast Guard. There is no single common factor associated with the aforementioned Deepwater issues. The issues associated with the 123s, Fast Response Cutter and National Security Cutter are addressed below in more detail.

National Security Cutter

The contract contains a 30-year service life requirement for the NSC and the vessel as designed will meet this requirement. As required by the contract, Northrop Grumman designed the NSC in accordance with proven U.S. Navy Design Data Sheets. In fact, the NSC design is structurally more sound than required under these Navy standards.

The DHS IG's conclusions were not based upon the most current program and design information. The Coast Guard and Northrop Grumman agree that there is no safety issue or operational restrictions associated with the current NSC design. In his January 30, 2007 testimony before the House Subcommittee on Coast Guard and Maritime Transportation, Commandant Allen stated, "There has never been a question of safety related to the ship's structure, nor have we ever anticipated any operational restrictions related to its design." In addition, the American Bureau of Shipbuilding (ABS) has certified the structural design drawings of the NSC.

The discussions between Coast Guard and Northrop Grumman engineers on the NSC relate to *fatigue-life.* Fatigue-life and *service life* are two different concepts. *Fatigue-life* refers to the amount of time prior to the onset of cracks in structurally significant elements in the vessel. When cracking occurs, appropriate repairs are performed. While some degree of cracking is expected during the life of a vessel, determining the length of time between ship delivery and the onset of cracking is not an exact science. *Service life,* in contrast, is the amount of time in which repairs of cracks and other conditions in the vessel remain economically viable to perform in order to keep the ship in service. Unlike service life, fatigue-life is not a contract requirement. The Naval Surface Warfare Center, Carderock Division (Navy Carderock) performed an analysis of the predicted fatigue-life of the NSC using a model which was not benchmarked using valid historical data and realistic operating conditions. When properly benchmarked, a 53.8 year fatigue-life is predicted for the NSC design. The differing fatigue-life analyses have resulted in a dialogue between engineers which will lead to a final determination on the need for any enhancements to further extend fatigue-life.

Although not required by contract, Northrop Grumman has undertaken the responsibility for working with the Coast Guard and Navy Carderock to achieve consensus on the predicted and desired fatigue-life of the NSC. Northrop Grumman has been involved in extensive analyses and dialogue with government engineers to resolve these issues to the satisfaction of the Coast Guard.

123 Conversion

ICGS proposed the 123′ conversion as an appropriate means to provide the Coast Guard with the necessary capability to meet its mission objectives while remaining within the confines of the program funding requirements. During the initial Deepwater competition, offerors were required to propose a set of specific solutions that did not exceed the funding limitation of *$500 million per year.* With new assets such as the National Security Cutter (NSC), Maritime Patrol Aircraft (MPA) and the Vertical Unmanned Air Vehicle (VUAV) being developed early in the program, it was not possible to design, develop and construct new patrol boats at program inception while keeping within those annual funding limitations. An interim solution was proposed. This interim solution was a modification to some of the Coast Guard's existing 110-foot vessels to 123-foot vessels with stern launch capability to satisfy many of the patrol boat requirements until a new design could be fielded.

Our proposal to convert the 110′ vessels was based on information then available and known to us. Prior to proposal submission, Bollinger, our subcontractor and original builder of the 110s, reviewed Coast Guard surveys of major structural repairs performed on the 110′ fleet. These surveys indicated that 110′ structural defi-

ciencies, when present, were the result of corrosion and could be addressed by identifying and renewing corroded plating and structure. This information was consistent with a Coast Guard report, dated March 8, 2002, prepared by the 110′ WPB Emergency Service Life Evaluation Board (SLEB Report). The SLEB Report stated that the 110′ hulls were in deteriorated condition but that the periodic repair of hull plating would improve the readiness of the fleet. Consistent with the SLEB Report and the Coast Guard surveys, ICGS determined that replacement of thin hull plating would be sufficient to overcome the deteriorated condition of the 110s.

Following contract award, but before any conversion work began, the Coast Guard, ICGS, Northrop Grumman, and Bollinger conducted a Preliminary Design Review, Critical Design Review, and Production Readiness Review of the 123′ design and proposed conversion scope of work. During these reviews, ICGS and Northrop Grumman presented to the Coast Guard the engineering analyses and design approach for the 123′ conversion effort.

Unfortunately, the 110′ vessels delivered for conversion were in worse condition than anticipated. While the worse than expected condition of the ships would require more replacement of hull plating, the Coast Guard, Northrop Grumman, and Bollinger did not believe that the viability of the conversion approach was in question.

Following the buckling on the MATAGORDA, a joint Coast Guard and Northrop Grumman tiger team discovered that the vessel had a *pre-existing* 110 workmanship issue at the location of the hull buckling. Specifically, a hidden, unwelded aluminum deck stringer was discovered immediately beneath the area where the failure occurred. All eight 123s were examined, and an unwelded stringer was found on one additional hull undergoing conversion. When modeled using finite element analysis, the stresses in the panels which failed on the MATAGORDA were significantly higher than the stresses shown when the model was run with this stringer intact. Based on this finding, the ICGS and Coast Guard believed this to be the primary cause of the buckling on MATAGORDA, and repairs were made accordingly.

In an effort to further improve the structural integrity of the 123s, three stiffener bands were installed; one at the upper edge of the side shell, one below this one and another on the edge of the main deck to increase the overall structural strength. While the finite element analysis and conventional calculations both agreed that the original hull, with the stringer under the deck intact, should be sufficient throughout the expected operating range of the 123s, these additional stiffeners were considered to provide an added margin of strength. The three stiffener bands were added to all the 123s.

Northrop Grumman has been committed to and remains committed to identifying the root causes of the 123′ structural issues. After learning of the MATAGORDA buckling in mid-September 2004, Northrop Grumman immediately began a review of all available information and reports on the incident. Northrop Grumman formed a Tiger Team with the Coast Guard Engineering Logistics Center (ELC), Bollinger Shipyards, and ICGS to investigate the cracking and buckling problems that had occurred on this vessel during its transit run away from Hurricane Ivan. The Tiger Team investigation occurred between September 2004 and January 2005.

As part of the Tiger Team effort, Downey Engineering performed finite element analyses of the 123′, which modeled the converted hull. In addition to these analyses, Northrop Grumman performed hull girder section modulus calculations and longitudinal strength calculations. Despite these extensive analyses and calculations, the Tiger Team was not able to correlate the problems actually experienced on the vessel based on the reported sea states. Northrop Grumman also retained Stress Engineering Services, Inc. to conduct metallurgical testing between August 2006 and February 2007. This testing revealed an issue on the main deck that exists on the 123s and across the entire legacy 110′ fleet. Northrop Grumman also collected data on shaft alignment and maintenance procedures both during the conversion and since, so that the procedures for checking and correcting alignment can be validated for both the 110′ and the 123′. Elements of the 123′ design, including the propellers and the stern-launch system, are being reexamined and validated.

The Coast Guard ELC commissioned its own finite element analysis, which at the time was not shared with Northrop Grumman. In February 2006, NGSS offered to perform a comprehensive engineering assessment at no cost to the Coast Guard. The Coast Guard declined the offer with the exception of some metallurgical testing. In early 2006, the Coast Guard ELC conducted additional testing and analysis on the 123s. Northrop Grumman was not provided an opportunity to participate in this testing. In fact, it was not until January 2007, that the Coast Guard began to share the test results with Northrop Grumman. Since that time, however, the Coast Guard is now sharing their test data with Northrop Grumman so it can be analyzed in conjunction with all of the other test data.

In summary, Northrop Grumman has assumed responsibility for working with the Coast Guard to understand the structural issues experienced on the 123s, and has devoted, and will continue to devote, significant resources to this effort well beyond our contractual obligations.

Fast Response Cutter

ICGS and Northrop Grumman originally proposed a Fast Response Cutter (FRC) with a steel hull design. Following contract award, substantial post-9/11 changes in the Coast Guard's mission and requirements resulted in a set of required capabilities that exceeded traditional patrol boat functions. As a consequence, the steel design originally proposed by ICGS and Northrop Grumman did not satisfy the new and expanded requirements of the Coast Guard. In addition, the Coast Guard accelerated the delivery requirement for the FRC by 10 years.

To meet the expanded post-9/11 requirements and accelerated schedule, Northrop Grumman conducted trade studies, the results of which indicated that a composite hull would best serve the Coast Guard's new post-9/11 mission requirements. One major consideration was that the composite FRC would result in approximately $1B in life cycle cost savings. The Coast Guard then elected to pursue the composite approach with a design-to-cost limit. This design-to-cost approach became a "production cost cap" but no requirements trade-offs were accepted by the Coast Guard. These performance requirements coupled with the cost cap resulted in a shortened vessel length (increasing length increases cost) and wider beam (to accommodate requirements) than traditional patrol boat hull dimensions. A worldwide survey proved that no existing patrol boat could satisfy the full set of requirements.

The Coast Guard and industry each conducted analyses of the FRC design and the best value approach for meeting Coast Guard operational requirements. Northrop Grumman is not aware of any Coast Guard determination that the FRC design is "unsuited" for its post-9/11 mission requirements. To the contrary, an independent study hired by the Coast Guard has confirmed the ability of the proposed FRC design to meet the challenging Coast Guard operational requirements.

Currently, the Coast Guard is sponsoring an independent business case analysis to determine if a steel or composite hull design is most cost effective. Northrop Grumman analysis has shown that the service life of a composite hull will be considerably longer than a traditional steel hull. While Northrop Grumman stands behind its FRC design, it will support the Coast Guard's ultimate decision in this matter.

Question 2. Do you believe the current contract is working? Are there aspects that you believe should be changed to ensure the Coast Guard receives state-of-the-art assets that meet the performance requirements of the Coast Guard, at a reasonable cost?

Answer. The Deepwater Program is working and has delivered value to the Coast Guard which includes HH–65 engine upgrades, legacy cutter communication suite upgrades, C–130J missionization, and other enhancements that have markedly improved Coast Guard operations. It cannot be forgotten that the program began before 9/11, and that the events of 9/11 have caused the Coast Guard to substantially change its mission requirements and the requirements for assets associated with carrying out these new and substantially increased mission requirements. Further, the Coast Guard is now part of the Department of Homeland Security. Such changes have stressed an infrastructure not originally designed for the post-9/11 world. In a post-9/11 world that must now move at a vastly increased pace, the Coast Guard, ICGS, Northrop Grumman, Lockheed Martin and many other contractors which support our Government's post-9/11 mission needs are and will encounter organizational changes and operational changes to achieve the demands of this new environment. The answer to such requirements is an even greater need to work collaboratively and to develop the contract and organizational structures necessary to support this collaboration.

The recent steps announced by Admiral Allen to re-align functions within the Coast Guard to provide greater oversight and responsiveness to address procurement management and technical issues will certainly address many of the Deepwater acquisition issues. This approach will yield benefits and significantly enhance the ability of the Deepwater Program to deliver the assets and support our Nation's needs to address post-9/11 mission requirements.

Several weeks ago, Commandant Allen met with Northrop Grumman CEO Ronald Sugar and Lockheed Martin CEO Robert Stevens in the first of a planned series of meetings to discuss near and long-term objectives and goals for the Deepwater Program. As an outcome, ICGS and the Coast Guard recently developed a Statement of Strategic Intent to provide a management framework for developing the way forward on the Deepwater Program. In addition, the Statement of Strategic Intent is

intended to clarify the roles the Coast Guard and ICGS in performance of the Deepwater mission.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TRENT LOTT TO PHILIP A. TEEL

Question 1. Please explain the difference between the Naval Surface Warfare Center—Carderock Division's (NSWC–CD) fatigue-life analysis method and inputs used for the National Security Cutter (NSC) and the ship design methods and calculations traditionally used to design Navy combatants and Coast Guard cutters. How does the NSWC–CD fatigue-life prediction for the NSC compare to proven hulls using the same model and inputs?

Answer. The Coast Guard performance specifications required Northrop Grumman to design and construct the NSC in accordance with the Cutter Specific Certification Matrix (CSCM). The NSC CSCM did not impose any new or additional operational requirements, but provided the standards for verification that the performance requirements are met.

The CSCM incorporated Design Data Sheets, which are widely accepted within the shipbuilding industry as the "traditional approach" to design and build ships. For decades, the Design Data Sheet approach has produced successful designs over a wide range of vessels. This approach implies an acceptable fatigue-life and long-term ship performance based on a reasonable level of maintenance. Northrop Grumman has used the Data Design Sheet approach in the design of numerous Navy vessels and the NSC design is structurally more sound than required under these Navy standards.

The contract contains a 30-year *service life* requirement for the NSC and the vessel as designed will meet this requirement. The Coast Guard and Northrop Grumman agree that there are no safety or structural issues nor are there any operational restrictions associated with the current NSC design. In his January 30, 2007 testimony before the House Subcommittee on Coast Guard and Maritime Transportation, Commandant Allen stated, "There has never been a question of safety related to the ship's structure, nor have we ever anticipated any operational restrictions related to its design." In addition, in a March 2007 article in the U.S. Naval Institute's *Proceedings* magazine, Admiral Blore was quoted as stating that "there is not a structural issue with the National Security Cutter. It's a great robust design" . . . and there is no "safety issue." In addition, the American Bureau of Shipbuilding (ABS) has certified the structural design drawings of the NSC.

The discussions between Coast Guard and Northrop Grumman engineers on the NSC relate to *fatigue-life*. Unlike service life, fatigue-life is not a contract performance requirement. The Naval Surface Warfare Center, Carderock Division (Navy Carderock) performed an analysis of the predicted fatigue-life of the NSC using a model not benchmarked or based upon valid historical data and realistic operating conditions. Applying the Carderock model to a proven hull such as the 40-year-old Hamilton class, yields a fatigue-life prediction of three to 7 years. The same analysis model run on the 30-year-old DDG–2 predicted a fatigue-life of approximately 5 years, demonstrating the insufficient benchmarking of the model.

When properly benchmarked, the NSC fatigue-life is predicted to be nearly 54 years. The differing fatigue-life analyses have resulted in a dialogue between engineers which will lead to a final determination on the need for any *enhancements* to further extend fatigue-life.

Although not required by contract, Northrop Grumman has been involved in extensive analyses and dialogue with government engineers to resolve these issues to the satisfaction of the Coast Guard.

Question 2. Please describe the modifications made to the original NSC design to accommodate Coast Guard concerns with the cutter's structural strength. To the extent that these modifications will be different between NSCs 1–2 and NSC 3 and beyond, please describe these differences.

Answer. Many of the structural items raised by the Coast Guard have been addressed and incorporated in the BERTHOLF and WAESCHE (NSC 1 and 2) during the design phase. These changes are now in the baseline design for all NSC ships. For example, upgraded steel, thicker steel, modifications to Fashion Plates and Reentrant Corners, and the addition of two longitudinal Hovgaard bulkheads to provide increased stiffness at the stern were incorporated into the design. Northrop Grumman also has made enhancements to address Coast Guard structural concerns with the design of the ship bottom. Northrop Grumman has further addressed structural issues raised by the Coast Guard by using reduced penetrations in the deck

stringer plates and reinforcing those that were still required using Navy fatigue guidance criteria.

These enhancements coupled with the post-9/11 mission requirements have added approximately 1,000 tons to the displacement, including a one-third increase in electrical power systems, a tripling of air conditioning and ventilation capacity, the addition of 25 antennas and a 26 percent growth in the size of the berthing spaces. These changes were necessary to address the heightened operational requirements of the Coast Guard. None of these changes are related to the fatigue-life issue.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. OLYMPIA J. SNOWE TO PHILIP A. TEEL

Question 1. The DHS OIG contends the National Security Cutter as currently designed, will fail to live up to Coast Guard mission requirement of 185 days underway over its 30-year life span. The Coast Guard expresses similar concerns. However, ICGS does not appear to agree with this conclusion. If NSC 1 was put into service without any of structural modifications the Coast Guard now says are necessary, would it meet the contractual performance requirements of a 30-year fatigue-life assuming 185 underway days per year?

Answer. Northrop Grumman continues to believe that the NSC meets the contract requirements for a 30-year *service life.* There is no contract requirement for a 30-year *fatigue-life.* Both the Coast Guard and Northrop Grumman agree that there are no safety or structural issues related to the ship's design. Nor are there any operational restrictions associated with the current NSC design. The NSC structural design meets the 30-year service life requirements of the contract and ABS, the certifying authority for NSC structural standards, has independently certified compliance with these structural standards.

The issues that have been raised between the engineers relate primarily to *fatigue-life,* an *extra-contractual matter.* The question currently being addressed by Northrop Grumman and the Coast Guard involves the fatigue-life of the NSC over its 30-year *service life.* Fatigue-life and service life are two different concepts. Fatigue-life refers to the amount of time prior to the onset of cracks in structurally significant elements in the vessel. When cracking occurs, appropriate repairs are performed. While some degree of cracking is expected during the life of a vessel, determining the length of time between ship delivery and the onset of cracking is not an exact science. Service life, in contrast, is the amount of time in which repairs of cracks and other conditions in the vessel remain economically viable to perform in order to keep the ship in service.

The 30-year *service life* of the ship was based on an assumption of 230 days away from homeport, a number that includes 45 days in port for logistics and 185 days away from port and underway. The "30-year life" requirement does not pertain to *fatigue-life.* In determining fatigue-life, the controlling assumption is the amount of time the vessel spends in extreme sea states, not total days underway. This assumption forms the basis for the differing engineering predictions of fatigue-life. Applying the Navy Carderock model to a proven hull such as the 40-year-old Hamilton class, yields a fatigue-life *prediction* of three to 7 years. The same analysis model run on the 30-year-old DDG–2 predicted a fatigue-life of approximately 5 years, demonstrating the insufficient benchmarking of the model. When the model is calibrated in accordance with Navy fatigue-life guidance instructions, and realistic real-world sea state conditions, the NSC fatigue-life is predicted to be nearly 54 years. We will continue to work with the Coast Guard to define the level of structural enhancement they desire.

Question 1a. Are the National Security Cutter design changes and structural enhancements requested by the Coast Guard needed to meet the Deepwater contract performance specifications? Please explain your reasoning.

Answer. No. As discussed above, the NSC as designed meets the contract performance requirements. However, the Coast Guard has requested structural enhancements based on a concern regarding the calculated prediction of *fatigue-life.* Northrop Grumman and Navy Carderock have used a relatively new method to model the predicted NSC fatigue-life by applying different approaches to existing ship designs, operational characteristics and hull form. The difference in the two approaches relates to whether the model is benchmarked using historical data from ships that have operated in similar environments for long periods of time. The Navy Carderock performed their fatigue analysis by assuming that the NSC would spend 100 percent of the time in specific locations known for very bad weather conditions. Based upon "real-world" operational experiences with naval vessels, the NSC will encounter a variety of sea states. As discussed above, when the analysis assumes

realistic real-world sea state conditions, the NSC fatigue-life is predicted to be nearly 54 years.

To the extent the ongoing discussions with the Coast Guard result in the Coast Guard requiring *fatigue-related* structural enhancements, those enhancements will be provided consistent with Coast Guard requirements.

Question 1b. In your written testimony you mention that there has been an extraordinary degree of transparency in the Deepwater program, but the DHS IG reports that it was refused access to personnel and information during its investigation of the NSC . . . what is your explanation for this discrepancy?

Answer. Throughout the course of the Deepwater Program, ICGS and Northrop Grumman have participated in a number of GAO audits and have supported and participated in reviews by the Defense Acquisition University, and the Coast Guard Program Management Team. In connection with these audits and reviews, ICGS and Northrop Grumman routinely provided support for audit team site visits to ICGS facilities, management and technical staff meetings with audit teams, briefings and updates to auditors, and support for multiple Coast Guard and independent data call responses. In addition, ICGS has provided access to and training on the ICGS electronic document system and numerous files and documents.

Consistent with our participation in these audits, and consistent with the Generally Accepted Government Auditing Standards (GAGAS), ICGS and its member companies offered to facilitate the Department of Homeland Security, Office of Inspector General (DHS OIG) audit by making personnel available for interviews while respecting the rights of our employees. Not knowing the subject of the audit or whether the audit related to or focused on ICGS or its member companies, ICGS requested in its February 17, 2006 letter that the OIG clarify the purpose and scope of the audit and, depending on its nature, to allow management or legal representation at interviews. The OIG neither acknowledged these requests nor sought to discuss how ICGS might facilitate their audit. The DHS OIG never contacted us again. ICGS and Northrop Grumman remain committed to supporting the Coast Guard, this Subcommittee and other agencies in their Deepwater oversight efforts.

Question 2. The DHS G Report on the *Acquisition of the National Security Cutter* (DHS G–07–23) states the Coast Guard allowed the Contractor to self-certify compliance with the standards. In the footnotes of the report (page 14), the Deepwater Surface Statement of Objectives states, ". . . performance specification and cutter specific certification matrix are certified either by self-certification or by an independent agent, except that the contractor shall use American Bureau of Shipping (ABS) to certify compliance with ABS standards." What are the practical differences and implications between ABS certification and "self-certification" with ABS certifying compliance with ABS standards?

Answer. ICGS does not self-certify compliance with the NSC performance specifications, but is required to verify to the satisfaction of the Coast Guard that the performance specifications have been achieved. Verification of specification compliance is accomplished through testing, examination, analysis, or simulation. The NSC specifications further require that the vessel be designed and constructed in accordance with NSC Cutter Specific Certification Matrix (CSCM). The CSCM identifies the standards to be followed in the design of the NSC, and compliance with these CSCM standards must be certified. The NSC CSCM does not impose any new or additional operational requirements; but provides the standards for verification that the existing requirements are met. The CSCM contains line items (SORTS) that describe how certain systems are certified. The certification process culminates with attesting by report, letter or similar documentation that the attribute or performance of the equipment or system meets the applicable standards of the CSCM. Any deviations from these standards must be formally approved by the Coast Guard.

Whether ICGS or ABS attests to compliance with CSCM standards, documentation must be provided which is verifiable. The ICGS verification process for the Coast Guard is similar to the verification and review process on Navy programs. ABS certifies to the CSCM standards through review of design drawings and supporting engineering analyses, and their efforts may include their own analytical verifications. ABS specifies to Northrop Grumman the design products to be submitted for review. ICGS develops its design in accordance with the CSCM using industry-accepted methods and produces associated documentation that is provided or available to the Coast Guard. The basic design along with this documentation undergoes an internal review process within Northrop Grumman engineering to evaluate the design against the requirements and assess the validity and correctness of the analyses and solution. In addition, the Coast Guard participates in design reviews during the entire development process so that they understand the technical

decisions proposed or made by ICGS/Northrop Grumman and the evolution of the design. Subsequent testing and trials complete the assessment of performance of the design against Coast Guard requirements. The Coast Guard retains the right to review and accept or reject the work.

Question 2a. Did Northrop Grumman Ship Systems or ICGS "self-certify" compliance with the design standards of the National Security Cutter as reported in the DHS G *Report on the Acquisition of the National Security Cutter* (DHS OIG–07–23)?

Answer. Northrop Grumman does not self-certify compliance with the NSC structural requirements of the contract. Rather, the Contract specifically requires the contractor to verify its work through inspection and testing. As such, Northrop Grumman does not have the final say as to whether an asset it provides meets all contract requirements. Instead, the Coast Guard has the final word contractually as the Coast Guard has retained the right to review and accept or reject work. The NSC, similar to the naval vessels Northrop Grumman designs and builds, is subject to a comprehensive external certification process. For the NSC, the American Bureau of Shipbuilding (ABS) certified 14 Systems Level drawings, including structural design drawings. ABS will also certify 35 ship systems during this acceptance process. These include Command and Control Systems, Propulsion Plant, Machinery Monitoring and Control, Fuel Systems, Anchoring Systems, and Steering Systems. Prior to or in conjunction with the delivery of the NSC BERTHOLF, there will be a total of 46 independent third-party certifications. These independent certifications include Final Aircraft Facilities, Flight Deck Status and Signaling, Navigation Systems, Interior Communications Systems, Guns and Ammunition Weapons System Safety, DOD Information Security and Accreditation, and TEMPEST. The U.S. Navy Board of Inspection and Survey (INSURV) will conduct the Ship Acceptance Trials (AT) when the cutter gets underway later this year.

The NSC CSCM provided to ICGS by the Coast Guard permits "self-certification" of design standards only in instances "where neither ABS nor other 3rd Party certification is required." However, any self-certification must be supported by documentation, such as Independent Inspection Reports (IIRs), Test Inspection Reports (TIRs), and Compartment Completion Inspection Reports (CCIR). Even in such instances, the Coast Guard retains the right to review and accept or reject such reports. As such, it is ultimately the Coast Guard, not ICGS or Northrop Grumman, which has the final say, contractually, as to whether the Coast Guard-provided standards have been met.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DAVID VITTER TO PHILIP A. TEEL

Question 1. Your testimony refers to the 2002 decision of the Coast Guard's Service Life Extension Board that determined that systematic hull repairs on the 110′ vessels was the solution to deterioration problems. Do you believe that the conversion complied with these recommendations?

Answer. The 123′ conversion was consistent with the recommendations contained in the 2002 110′ WPB Emergency Service Life Extension Board Report (SLEB Report). The Coast Guard SLEB Report, issued before the eight patrol craft were converted, recognized the deteriorated condition of the 110′ hulls, and concluded that the periodic repair of hull plating, when necessary, would improve the readiness of the fleet.

In fact, the SLEB Report made reference to the upcoming 123′ conversion effort, which would utilize the hull repair approach recommended by the SLEB. Under the 123′ conversion plan, Bollinger, our subcontractor, conducted an ultrasonic examination of the hull plating on each inducted 110′ and replaced any plating that was less than 90 percent of its required thickness. Consistent with the SLEB Report and the Coast Guard surveys of the 110s, ICGS believed that replacement of thin hull plating would be sufficient to overcome the deteriorated condition of the patrol boats. In this manner, the SLEB Report confirmed the belief that the 110′ structural deficiencies could be addressed by renewing corroded plating and structure during conversion.

Question 2. Can you describe the role of the American Bureau of Shipping in the approval of the hulls on the MATAGORDA?

Answer. The performance specifications require that the 123′ conversion be designed and constructed in accordance with the 123′ Cutter Specific Certification Matrix (CSCM). The CSCM identifies the standards to be followed in the design and conversion to the 123′. The 123′ CSCM does not impose any new or additional operational requirements, but provides the standards for verification that the existing requirements are met. The CSCM contains line items (SORTS) that describe how

certain systems are certified, and the 123′ is designed to be compliant with the applicable CSCM standards. Any deviations from these standards must be formally approved by the Coast Guard.

SORT 109, General Requirements for Hull Structure, and SORT 113, Shell Plating, in the CSCM address the structural design requirements for the 123′ hull extension. The areas addressed by these SORTS include the general requirements for hull structure and requirements for shell plating, respectively. SORTS 109 and 113 adopt the 1997 American Bureau of Shipping (ABS) Guide for Building and Classing High Speed Craft. The general requirements of SORT 109 were applicable to new or modified structure rather than the entire legacy 110′ hull. The method of verification of compliance with the ABS standard is through examination by ABS.

During the period from August 25, 2003 to April 7, 2004, ABS examined the 123′ structural design and reviewed drawings for compliance with structural design SORTS 109 and 113. Periodic visits were made by ABS during the course of the conversion to verify that the work was being accomplished in accordance with the approved drawings. On April 7, 2004, ABS issued a Report of Survey number MC510848–A, certifying that their inspectors examined the design and construction of the 123′ for compliance with the approved design. The report specified the areas examined, including those covered by SORTS 109 and 113, and certified that the 123′ hull extension design complied with contractual ABS requirements. This certification applies to all 123′ hulls, including the MATAGORDA.

Question 3. Could you comment on the plan to provide a composite hull for the FRC? Is this the right solution, and is it cost effective?

Answer. The ICGS proposal selected by the Coast Guard in 2002 identified Bollinger as the designer and builder of the FRC. The proposal also contemplated the FRC would not be awarded until 2018. The advent of new post-9/11 mission requirements coupled with the Coast Guard's desire to obtain a vessel now and not years later to meet the post-9/11 mission requirements resulted in the FRC being accelerated by 10 years. To meet the new post-9/11 mission requirements and to address a longer service life for the new FRC, Northrop Grumman conducted a business case analysis and, as a result, proposed a low maintenance, long life composite hull. The composite hull that was then proposed showed substantial savings (over $1B in life cycle cost) resulting from not having to replace the hull for 35–40 years.

An independent third-party analysis also confirmed that Northrop Grumman's FRC design appeared to meet or is capable of meeting all of its design and performance requirements. Northrop Grumman believes the FRC design, while non-traditional, is sound and meets Coast Guard requirements.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO DR. LEO S. MACKAY

Question 1. ICGS is responsible for developing the assets needed for the Coast Guard's performance requirements. The DHS IG found that the Coast Guard retained very little authority over technical decisions. If that is true, and a design ends up being flawed, isn't it the responsibility of ICGS?

Answer. A design could be determined to have flaws for a number of reasons. The basic requirements from which the design was developed could be flawed or there could be errors made in the design process. An analysis must be performed to determine the nature and characteristics of a suspected design flaw as well as the root cause. It is important to note how the Deepwater technical approval process operates. As a design matures, it goes through a full set of formal technical review steps—preliminary design review (PDR), critical design review (CDR), test readiness review (TRR), and production readiness review (PRR) are the main features of the process. At each of these reviews a full complement of government and industry representatives is present. ICGS makes recommendations to the Coast Guard and presents data that confirms how the design achieves all conditions for current step in the process and how it is ready to progress to the next step in the process. The Coast Guard decides and approves or disapproves progressing to the next step in the process. This process has been in place since inception of the program and enables the Coast Guard to decide the technical maturity of all designs.

Question 2. Do you know of any examples in which ICGS, Lockheed Martin, or Northrop Grumman used the awarding of Deepwater subcontracts to industry partners as a means to leverage other potential deals or contracts for Lockheed Martin or Northrop Grumman?

Answer. I can answer for Lockheed Martin. There were no subcontracts awarded by Lockheed Martin as a means to leverage other potential deals or contracts for Lockheed Martin.

Question 3. Can you please explain the advantages of using a systems integrator as far as interoperability and total ownership cost are concerned?

Answer. Lockheed Martin is using System Engineering methodologies to accomplish a cost-effective approach to integration across multiple, geographically-dispersed platforms. This complex endeavor requires the application of a wide-range of engineering disciplines, synchronized to program timelines and objectives. In the context of Deepwater, Systems Integration engineering is a discipline for building complete systems by bringing together components from different sources so that all individual components together produce synergistic results not obtainable as standalone subsystems. Systematic analysis of organizational, technological, and operational factors using these systems integration techniques and tools have produced good results:

- Minimization of the cost of asset acquisition, operation and maintenance; and
- Maximization of assets' ability to interoperate with each other as well as with other agencies and departments.

The Deepwater system of systems approach is achieving performance that is more than the sum of individual capabilities at lower costs than one-for-one replacement.

The Deepwater engineering team has also achieved a high level of reuse of off-the-shelf items, such that the majority of the program software has already been developed, tested, proven, and used by others. Deepwater has avoided nearly $97M of engineering and software development costs in addition to obviating risks of creating new software. In addition, with interoperability designed in, the costs of testing performed in a step-by-step fashion between each asset are precluded. This would have entailed as much as an additional $145.5M for the broad range of Deepwater assets being upgraded and deployed.

Question 4. Isn't it possible to integrate assets and equipment with common technology without use of a systems integrator?

Answer. We believe the Deepwater system engineering and integration approach described above is essential to achieve commonality and interoperability in an effective and efficient manner. Without a system-centric approach is more costly and more risky to establish interoperability and commonality as well as control the total ownership costs of systems and assets.

Question 5. For instance, can't Lockheed work with Coast Guard to use the communications and other systems on all of their assets without managing every aspect of the procurement?

Answer. Industry's performance has been closely supervised by the Coast Guard. All designs and improvements are based on trade studies, analyses, and technical considerations. The Coast Guard is the decisionmaker and contracting authority and all major acquisition decisions are reviewed and approved by Coast Guard senior leadership. The Deepwater program uses the depth of capabilities and experience of its industry partners to provide solutions in accordance with Coast Guard requirements. The results so far indicate that Deepwater has made a difference in the effectiveness of the Coast Guard with regard to the numbers of drug seizures, migrant interdictions and lives saved.

Question 6. Dr. Mackay, the GAO has described Lockheed's "Open Business Model" as a philosophy and not a requirement for competition. Is that an accurate description?

Answer. The Open Business Model is part of the Lockheed Martin subcontracting process that helps ensure best value throughout the program. It involves deferring down-select decisions as long as practicable to avoid guaranteed work share to a particular supplier. This helps facilitate thorough evaluations of the marketplace for the most appropriate products and services. Deepwater competition requirements on the program are governed by the Federal Acquisition Regulations 52.244–5, "Competition in Subcontracting."

Question 7. How many RFPs have ICGS or the first-tier subcontractors (Lockheed and Northrop) issued for subcontracts under the Deepwater program?

Answer. I can answer for Lockheed Martin. Lockheed Martin has issued approximately 2,400 Requests for Proposal and Requests for Quotation since the program began. This value is an empirical calculation based on the number of suppliers currently being used by Lockheed Martin in performance of the Deepwater program. There are presently 342 suppliers, including Lockheed Martin divisions and subsidiaries, for a total value of $745,392,640. The list without Lockheed Martin divisions and subsidiaries totals 334 suppliers for a total value of $688,299,176.

Question 8. If you are a company that has an alternative product that has merit, what avenues exist for getting such products considered by ICGS?

Answer. A supplier with an alternative product should register at *www.teamdeepwater.com*. Together with Northrop Grumman, Lockheed Martin has hosted six Innovation and Industry Days across the country resulting in an active database of more than 3,000 supplier-product offerings. Registering on the website is the necessary first step in the process. Registries are reviewed monthly and our procurement department takes appropriate steps to contact suppliers based on current and planned needs.

Question 9. The GAO in 2004 found that 40 percent of subcontracts were awarded by Lockheed and Northrop to themselves. Has this percentage gone up, down, or stayed about the same since then?

Answer. I can answer for Lockheed Martin. As of December 2006, the Lockheed Martin purchasing department had awarded subcontracts and interdivisional work transfers totaling $745,392,640. Subcontracts involve awards to firms outside of Lockheed Martin. Interdivisional work transfers involve "subcontracts" to entities within Lockheed Martin. The total value of $745,392,640 comprises $688,299,176 of subcontracts and $77,093,464 of interdivisional work transfers. Thus the value of subcontracts to firms outside of Lockheed Martin is 89.7 percent of the total value of all awards.

Question 10. In your opinion, how is the Lead Systems Integrator contracting approach adding value to the Coast Guard and the American people?

Answer. Systems engineering and integration balances trade-offs, refines force configurations, and achieves demanding performance goals across a multiplicity of mission areas. Systems engineering and integration touch every facet of the Deepwater enterprise including human-capital management, information technology, air and surface platforms, integrated logistics; command, control, communications and computers; intelligence, surveillance, and reconnaissance; and, most importantly, the fleet operator.

The systems engineering and integration discipline facilitates the use of off-the-shelf and fielded maritime systems to maximize commonality and interoperability. For example, the National Security Cutter (NSC) is using 75 percent of the U.S. Navy's Open Architecture Command and Decision System. The Medium Range Surveillance aircraft Command and Control System is employing over 50 percent of the functionality of the Navy's P–3 Anti-Surface Warfare Improvement Program. The Operations Center Consoles on the National Security Cutter use over 70 percent of the design of the Navy's UYQ–70 Display Systems. The approach for missionizing the Coat Guard's six HC–130J long-range search aircraft will result in approximately 90 percent commonality in C^4ISR systems planned for the Deepwater HC–144 medium-range surveillance aircraft. This is essential to commonality and interoperability. In addition, this approach captures the extensive work undertaken with the Navy to establish the best Human System Interface including workspace ergonomics, viewing characteristics, input devices and overall system architecture.

Deepwater is already providing value to the Coast Guard and the American people:

- Increased drug and illegal migrant interdiction, as well as increased lives saved due to the improved capabilities provided by the upgraded C^4ISR systems. "The Deepwater Upgrade provides vastly improved communications and interoperability. In the past year this ship has operated from above the Arctic Circle to well below the Equator. We have enjoyed 24/7 real time links to operational commanders and database management regardless of our physical location. The upgrades have proven to be tough, dependable, and easily maintained."—*USCGC MORGENTHAU Commanding Officer*
- Increased capability in the HH–65C helicopter which has led to safer missions for Coast Guard aviation personnel as well as more lives saved with faster speed, twice the endurance and twice the payload. The more powerful HH–65C helicopters flew 85 sorties and saved 305 lives following Hurricane Katrina. It was not uncommon for the modernized helicopter to hoist twice the number of people and remain on station for twice as long as older and less-reliable Bravo models. "It's a beautiful bird, I was a co-pilot for Hurricane Katrina; we were able to carry more fuel and fit into tighter landing zones with less fear of losing an engine."—*HH–65C pilot Air Station Atlantic City*
- Two new HC–144 Maritime Patrol Aircraft have been delivered under Deepwater and are undergoing C^4ISR mission package installation to make these the most capable aircraft in the Coast Guard's aviation history. The C–130J aircraft is being outfitted with interoperable mission packages for long range surveillance. It is undergoing extensive modifications including installation of belly-mounted surface search radar, nose-mounted electro-optical infrared sensor and

a flight deck mission operator station. The project was assigned to Deepwater to ensure integration and interoperability with all new and existing aviation assets, including its legacy fleet of C–130H aircraft.

- Work continues to develop logistics support for the Maritime Patrol Aircraft and National Security Cutter. Construction is well underway on the C^4ISR training suite at Training Center Petaluma, CA, and MPA Hangar at Aviation Training Center Mobile, AL.

Question 11. Do you have any idea what the total costs above the original contract price are that can be attributed to change orders by the Coast Guard once they were locked in to a design that did not serve their needs?

Answer. Changes in the technical baseline from June 2002 were the result of post-9/11 new mission requirements including clarifications of specifications to meet asset performance capabilities. As such, the Coast Guard presented a revised program baseline to Congress of $24B/25 years versus the original plan of $17B/20 years to account, in large part, for these changes.

Question 12. Will the logistics system that ICGS is to deliver under the contract be ready for the NSC 1 when it becomes operational? What about for all other Deepwater assets? Exactly what have you provided to the Coast Guard at this point on your logistics plan?

Answer. The current contractual work to develop and deploy the Logistics System for NSC 1 is fully funded and being carried out against an approved baseline schedule. ICGS is currently on plan to deliver an operating Logistics System, as evidenced in various status reports. The Coast Guard has recently opened discussion with ICGS to redefine the processes of Logistics support for NSC 1, including roles and responsibilities for Coast Guard logistics infrastructure commands. Some of these discussions may result in contractual changes, but ICGS is committed to ensuring the best Logistics sustainment infrastructure is in place for NSC 1. ICGS has developed and achieved Initial Operational Capability of the Aftermarket Support Organization and is on schedule to fully support NSC 1 upon delivery.

All other Deepwater Assets are supported under existing contracts. As assets come into their Logistics support phase (post DD250, the "Material Inspection and Receiving Report"), contracts are being let to cover ICGS support. Some contracts are being negotiated now to bring in this support. Aviation logistics support for the first three MPAs is an example of support to be awarded. ICGS has been supporting over 50+ operational CG assets for the last 12 months.

ICGS has provided all contractual deliverables to date, in accordance with the program of record Integrated Master Schedule (IMS). Specific examples include Integrated Support Plans, Training Plans and curriculum, Technical Manuals for operations and maintenance, initial maintenance tasks, spares, and sourcing recommendations, etc. For the NSC, ICGS established an approved Best Value Analysis process that has processed 60 percent of C^4ISR and HM&E sub-systems sustainment solutions. Logistics process documents, deliverables, and services have been carried out according to approved plans. Contracts that have been completed were done with full disclosure to the government via certificates of conformance and DD250s where required. Logistics support is aligned and in concert with the contracts delivery schedules.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUYE TO DR. LEO S. MACKAY

Question 1. Dr. Mackay, Lockheed Martin is quoted in a letter dated August 29, 2006, to Integrated Coast Guard Systems saying that testing each of the components of the C^4ISR system installed aboard the 123-foot cutters would be "time consuming, expensive, and of limited value," and that waivers should be sought. What did Lockheed mean by "of limited value?"

Answer. Off-the-shelf, ruggedized maritime systems were selected for the C^4ISR system in accordance with the Coast Guard Cutter Certification Matrix (CCM). The CCM did not require equipment designed and tested to full U.S. Navy military standards and performance specifications (MIL–STDs and MIL–SPECs). We have a long and wide-ranging experience in delivering and maintaining high performance combat systems to the U.S. Navy and allied navies. As such, we believe that extensive testing of off-the-shelf, ruggedized maritime equipment to determine the level of compliance to U.S. Navy military standards and performance specifications would not provide any significant operational benefits to the Coast Guard and would have defeated the benefits of off-the-shelf, ruggedized maritime systems.

Question 2. As I asked Mr. Teel, do you believe the contract is working?

Answer. We believe the contract is working. We are making good progress and are delivering significant new and upgraded capabilities. At the same time, we recognize the system level effects of networking are essential to achieving the level of mission performance needed by the Coast Guard. Lockheed Martin is accomplishing high rates of software reuse as well as system commonality and integration by the rigorous application of proven system engineering processes and capabilities. This is saving significant amounts of time and money. In addition, we are managing implementation of support systems for all Deepwater program domains.

Every one of the Coast Guard's 12 high-endurance and 27 medium-endurance cutters have received not one but two command and control system upgrades—giving the fleet markedly improved capability to seize drugs, interdict migrants and save lives. As for shore sites, there are a total of 12 on contract: two Communication Area Master Stations, eight Districts, one Sector and Headquarters.

Two medium-range surveillance maritime patrol aircraft, the newly designated HC–144, have been transferred to the Coast Guard, missionization is underway and two crews are already in training. At the same time, we are working to complete re-engining and upgrading of HH–65 helicopters with 68 of 95 helicopters delivered to date. Lockheed Martin and American Eurocopter working with the Coast Guard Aircraft Repair and Supply Center are now producing upgraded helicopters ("Charlie" models) that can fly faster, twice as far and with twice the payload. Six long-range surveillance C–130J aircraft are undergoing missionization and will be delivered with fully interoperable command, control and communications systems. In addition, the service contract for the Helicopter Interdiction Tactical Squadron based in Jacksonville, FL, has been renewed for a fifth year. These eight MH–68A helicopters are capable of Airborne Use of Force and have had a significant impact on illicit drug interdictions.

Question 3. Are there aspects that you believe should be changed to ensure that the Coast Guard receives state-of-the-art assets that meet the performance requirements of the Coast Guard, at a reasonable cost?

Answer. The terms of the overarching Deepwater contract were collaboratively modified between the U.S. Coast Guard and industry teams (Lockheed Martin and Northrop Grumman) in the months leading up to the release of the Award Term RFP. The changes to which we have fundamentally agreed will greatly simplify the negotiating process and will significantly strengthen the Government's ability to manage the Deepwater contract, particularly taking into consideration the Coast Guard's recently announced organizational restructuring.

The Deepwater contract changes now in negotiation are aimed at clarifying the contract terms, to our mutual benefit, so that both the Coast Guard and the industry team have a clearer alignment of expectations and commitments, and streamlines some aspects of contract deliverables and measurement to enable the Coast Guard to better manage the contract and the industry team to more clearly meet and exceed expectations. Elements that will be impacted include contract deliverables, performance criteria and incentives, cost control criteria and competition, among others. The contract also includes specific reference to relevant Federal contracting regulations.

Question 4. I understand the ICGS uses a Lockheed Martin concept for competition, called the "Open Business Model." The GAO has described this as only a philosophy, and not a requirement for actually competing subcontracts. Can you please explain exactly what this "Open Business Model" is, and how it differs from the typical requirement for formal competition of subcontracts?

Answer. The Open Business Model is part of the Lockheed Martin subcontracting process that helps ensure best value throughout the program. It involves deferring down-select decisions as long as practicable to avoid guaranteed work share to a particular supplier. This helps facilitate thorough evaluations of the marketplace for the most appropriate products and services. Deepwater competition requirements on the program are governed by the Federal Acquisition Regulations 52.244–5, "Competition in Subcontracting."

Question 5. Do you have an explanation for the difficulty experienced by the Department of Homeland Security's Inspector General's office in gaining access to the ICGS personnel, information, and documentation during the course of their audit on the National Security Cutter?

Answer. The Department of Homeland Security Inspector General's office has access to personnel, information, and documentation that may be required during the course of audits. We have requested that the Inspector General's personnel respect the rights of industry employees during any interviews.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. OLYMPIA J. SNOWE TO DR. LEO S. MACKAY

Question. In your written statement, you mention the importance of maintaining emphasis on C^4ISR (Command and Control, Computers, Communications, Intelligence, Surveillance, and Reconnaissance). Further, you state Lockheed Martin is working closely with ICGS to ensure that electronic equipment developed and produced under the cognizance of the C^4ISR domain is appropriately configured for installation on the ship. Yet the DHS reports that the safety of the 123′ patrol boat crews was compromised by the contractor's failure to utilize low smoke cabling and that the contractor knowingly installed C^4ISR equipment aboard the 123′ cutter and prosecutor that did not meet specific environmental requirements outlined in the Deepwater contract. With the emphasis on appropriately configured C^4ISR equipment, why did the contractor fail to use low smoke cabling and knowingly install C^4ISR equipment that did not meet environmental requirements?

Answer. Please note that the DHS OIG Report—OIG–07–27 titled "*110′/123′ Maritime Patrol Boat Modernization Project*" did not conclude the safety of the 123′ patrol boat crews was compromised by the contractor's failure to utilize low smoke cabling. This was a complainant's allegation to the OIG's Complaint Hotline. The results of the subsequent OIG review did not uphold this allegation. Although not all cables were low smoke cables, safety was not compromised. The Coast Guard has determined that no further action is required for the low smoke cabling.

The IG did determine that aspects of the C^4ISR equipment installed aboard the 123-foot cutters do not meet the design standards set forth in the Deepwater contract. This allegation was upheld and the Coast Guard was and is actively involved in assessing compliance of marine, ruggedized off-the-shelf C^4ISR equipment with military specifications. The Coast Guard expressed a requirement for off-the-shelf equipment and at the same time imposed military standards in the contract. The IG's resulting recommendations included the need for the Coast Guard to develop and implement a plan to improve the process for reviewing and adjudicating contractor Requests for Deviations/Waivers (RFD/RFW). The RFD/RFW process permits the customer to make an informed decision regarding cost-effectiveness and safety considerations. It is not a step of convenience for the contractor. It is a responsible way to allow the customer to make important tradeoffs subject to its own criteria and requirements. The IG further concluded that the plan should ensure that all waiver requests are resolved prior to implementation and that the rationale underlying these decisions is formally documented. It is our understanding that the Coast Guard is in the process of implementing appropriate contractual and program management oversight process improvements.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. DAVID VITTER TO DR. LEO S. MACKAY

Question. Do you attribute the improvements in the Coast Guard's statistics on search and rescue, alien interdiction and drug interdiction to the Deepwater program?

Answer. Yes, we are making good progress and are delivering significant new and upgraded capabilities. At the same time, we recognize the system level effects of networking are essential to achieving the level of mission performance needed by the Coast Guard. Lockheed Martin is accomplishing high rates of software reuse as well as system commonality and integration by the rigorous application of proven system engineering processes and capabilities. Every one of the Coast Guard's 12 high-endurance and 27 medium-endurance cutters have received not one but two command and control system upgrades—giving the fleet markedly improved capability to seize drugs, interdict migrants and save lives.

Use and reuse of commercial-off-the-shelf, government-off-the-shelf and fielded maritime systems are being maximized for commonality and interoperability. The application of off-the-shelf software permits Deepwater to take advantage of the rapid changes in the commercial marketplace and the investments which commercial firms make in their best of class technologies. This will facilitate Coast Guard interoperability with civil and international systems, a key consideration given their mission mix.

The results so far indicate that Deepwater has made a significant contribution to the effectiveness of the Coast Guard with regard to the numbers of drug seizures, migrant interdictions and lives saved. Coast Guard statistics show double- and triple-digit percent improvements as Deepwater assets and upgrades enter the fleet.

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