

HEARING TO RECEIVE TESTIMONY ON MARINE CORPS ACQUISITION PROGRAMS IN REVIEW OF THE DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2012 AND THE FUTURE YEARS DEFENSE PROGRAM

WEDNESDAY, MAY 18, 2011

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

The subcommittee met, pursuant to notice, at 2:42 p.m. in room SR-232A, Russell Senate Office Building, Senator Jack Reed (chairman of the subcommittee) presiding.

Committee members present: Senators Reed, Hagan, Blumenthal, Wicker, and Ayotte.

Majority staff members present: Creighton Greene, professional staff member; and Thomas K. McConnell, professional staff member.

Minority staff member present: David M. Morriss, minority staff director.

Staff assistants present: Kathleen A. Kulenkampff and Brian F. Sebold.

Committee members' assistants present: Carolyn Chuhta, assistant to Senator Reed; Gordon Peterson, assistant to Senator Webb; Roger Pena, assistant to Senator Hagan; Laurie Rubiner, assistant to Senator Blumenthal; Lenwood Landrum, assistant to Senator Sessions; Joseph Lai, assistant to Senator Wicker; and Brad Bowman, assistant to Senator Ayotte.

OPENING STATEMENT OF SENATOR JACK REED, CHAIRMAN

Senator REED. The subcommittee will come to order. Let me begin by once again thanking Senator Wicker for his great cooperation. I look forward to working with Senator Wicker another year. We had I think a very productive and successful session last year.

And I want to welcome Senator Ayotte from New Hampshire, who brings great insights and skill. Thank you, Kelly. Thank you very much.

Senator AYOTTE. Thank you, Mr. Chairman.

Senator REED. We I think had a very successful fiscal year 2011, despite all the challenges, in terms of coming up with the necessary resources for the Marine Corps and for the Navy. I again am confident, working together, we can provide the resources necessary

for the mission of the Marine Corps and the Navy in very difficult times and, I emphasize, on a bipartisan basis.

This afternoon we're convening to hear the testimony concerning the Marine Corps acquisition programs. I want to welcome Secretary Sean Stackley—Secretary, welcome—Vice Admiral John Blake—Admiral—and Lieutenant General George Flynn, back to the subcommittee. Welcome, gentlemen. We are grateful for all your service to the Nation and to the Navy and certainly want to have you convey our best to the Navy and the Marine Corps, the young men and women who do the real work and do it so well.

The Marine Corps has continued supporting the National interests around the world, including having significant participation in Afghanistan. I want to express the committee's, indeed the Nation's, thanks for these outstanding efforts of the Marine Corps and others who are involved there.

Since last year, the Marine Corps completed a force structure review which recommended several actions. Among these were the following, and I'm paraphrasing: Retain the capacity and capabilities to conduct amphibious operations with the assault echelons of two Marine expeditionary brigades, reinforced by one or more additional Marine expeditionary brigades aggregated from flying in forces and equipment forward-positioned in maritime prepositioned ships.

I commend the Marine Corps for completing this review and reaching this conclusion. The uncertainties we face in the world make it even more imperative than before that we develop a vision of the world as we would hope to shape events in it.

Also since last year, we have seen the Marine Corps recommend cancellation of what was one of their premier modernization programs, the Expeditionary Fighting Vehicle, or EFV. Since the mid-1980s the Marine Corps had focused on several programs that would enable what was then known as "Ship-to-Objective Maneuver." These included the V-22, the Landing Craft-Air Cushion, or LCAC, and the EFV.

We called this hearing to better understand the rationale behind making this change and to understand the path forward for maintaining that capability to conduct amphibious operations. However, this hearing is not solely about that issue. We need to understand what progress the Marine Corps is making in resetting the force and in modernizing other portions of its equipment inventory. We also need to understand how Navy investment is enabling the Marine Corps to exercise the capabilities that are inherent to the Marine Corps.

I believe that the world we face will continue to be one of uncertainty and unrest. Therefore I continue to believe that great emphasis should be placed on lighter, more lethal forces and on mobility of forces. But we must not let the outstanding performance of our Marine Corps distract attention from some of the real fiscal challenges that the Corps faces. In 2002 Senator Kennedy, then the Seapower Subcommittee chairman, noted that the Department of the Navy needed to work diligently to address some of these very important problems, including improving fire support capability, including organic Marine Corps fire support and Navy shore fire support, enhancing our tactical mobility for Marine Corps forces, and

augmenting our mine countermeasures capability both for sea and land combat.

In each of these areas, we have made some progress, but progress has been slow. The Navy cancelled the DDG-1000 program at a total of three ships, capping it at three ships. These ships would have provided a volume of fires to support marines until the time when they are able to establish organic fire support ashore.

We have been able to enhance tactical mobility in some respects, but now we see the end of the EFV with uncertainty about the system or systems that will replace that capability. We have seen the Navy begin to shift the mine countermeasures mission to the Littoral Combat Ships and their mission packages. These ships should be much more deployable, but progress on completing the mine countermeasures systems that would be deployed from their mission modules has been subject to a number of setbacks.

There are other examples, but in the interest of time I will just stop there. I hope we can explore these and other issues with the witnesses today.

Before we begin with our opening statements by the panel, I would now like to recognize Senator Wicker and his comments. Senator.

STATEMENT OF SENATOR ROGER F. WICKER

Senator WICKER. Thank you, Mr. Chairman, for holding this important hearing, and thanks to our panelists. We certainly appreciate their service and don't want to pass up on an opportunity to say that publicly.

The focus of today's hearing is Marine Corps procurement and the President's fiscal year 2012 budget request and Navy support to Marine Corps operations. In particular, we hope to focus on Secretary Gates' decision, announced in January, to end the Marine Corps Expeditionary Fighting Vehicle, EFV, program after nearly 15 years in development and more than \$3 billion in sunk costs.

This decision has raised concerns among many supporters of the Marine Corps, and I count myself as one of those, because the ability to conduct an amphibious assault against a defended shoreline is the core competency that distinguishes our Marine Corps from other ground combat forces. It is a capability that has been honed to perfection over years of investment and development of doctrine, training, and specialized equipment, that has proven invaluable in countless missions.

Amphibious operations made possible by the legacy vehicles that have come before the EFV have been as large as the Inchon landing during the Korean War in 1950 and the feinted landings in Kuwait during Operation Desert Storm in 1991. Such operations have also been as small as the withdrawal of U.S. forces from Somalia in the mid-1990s and the ongoing contingency operations currently under way off North Africa. The ability to perform such complex operations is a force multiplier for the United States that must be taken into consideration by any adversary we might face.

Secretary Gates' decision to end the EFV program as part of the budget cuts sought in the fiscal year 2012 budget, defense budget, is supported by the Secretary of the Navy and the Commandant of

the Marine Corps. They believe it will cost too much to continue EFV development, to purchase vehicles, and to operate them over the long term. However, the Department of the Navy's cost projections for the EFV are being evaluated in comparison to the portion of the budget historically available to the Marine Corps to purchase and operate its ground combat vehicles.

Mr. Chairman, I question whether or not historical cost proportion should be the primary factor in determining the systems required for the Marine Corps to meet its mission requirements. As all of us recognize, the cost of even the most basic utility vehicle, the general purpose Humvee, drastically increased as requirements-driven modifications were implemented.

As such, I hope the witnesses will explain carefully the methodologies that were used to evaluate our current requirements for an amphibious vehicle and how that analysis led to their decision to abandon the EFV, to start over with lesser requirements. I would specifically appreciate our witnesses addressing some specific questions regarding the proposed termination of EFV:

First, how are essential criteria like speed and the distance the vehicle will travel to the beach consistent with the Marine Corps' and the Navy's concept for ship-to-objective maneuver?

Second, if we lower the requirements how do we ensure that a vehicle other than EFV is going to be any less expensive to buy or operate, or that an alternative vehicle fundamentally changes the budget crunch the Marine Corps faces in updating its total inventory of ground combat vehicles?

And third, how do we ensure that the new vehicle can be delivered to the Marines in a timely manner if we start over again, given that we've been working on a replacement for the current AAV since the mid-1990s?

The Navy-Marine Corps planning concept which underlays the requirement for the EFV has been that Navy ships should be over the horizon at 25 miles from shore when launching Marines. The new concept of the amphibious combat vehicle now being discussed to replace the EFV may be launched as close as 10 miles from shore. I'd like to hear from our witnesses about our current naval capabilities to protect marines and sailors from threats such as anti-ship cruise missile systems, anti-ship ballistic missile systems, sea mines, and hostile aircraft.

Given the Marine Corps requirement for naval surface fire support that was intended to be met by the DDG-1000 Zumwalt destroyers, now capped at only three ships, as the chairman stated, I would like our witnesses to discuss whether only three DDG-1000 ships can meet the Marine Corps naval surface fire support requirement, or what will be done to upgrade the fire support capability of our other surface ships.

Gentlemen, there are a lot of issues for us to discuss and I look forward to the testimony of our witnesses.

Thank you, Mr. Chairman.

Senator REED. I wonder, Senator Ayotte, if you would have a comment, Senator?

Senator AYOTTE. I don't. Thank you very much.

Senator REED. Thank you.

Secretary STACKLEY. And your testimony has been made part of the record, so feel free to summarize and abridge freely.

Mr. Secretary.

STATEMENT OF SEAN J. STACKLEY, ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION; ACCOMPANIED BY LT. GEN. GEORGE J. FLYNN, USMC, DEPUTY COMMANDANT FOR COMBAT DEVELOPMENT AND INTEGRATION/COMMANDING GENERAL, MARINE CORPS COMBAT DEVELOPMENT COMMAND; AND VADM JOHN T. BLAKE, DEPUTY CHIEF OF NAVAL OPERATIONS FOR INTEGRATION OF CAPABILITIES AND RESOURCES

Mr. STACKLEY. Yes, sir. Chairman Reed, Senator Wicker, Senator Ayotte. Thank you for the opportunity to appear before you today to address Marine Corps programs. I'll be testifying alongside Lieutenant General Flynn and Vice Admiral Blake, and if it's acceptable I will keep my opening remarks brief and submit a formal statement for the record.

Your Navy and Marine Corps serves as America's expeditionary force in readiness, a balanced air-ground-naval force, forward deployed and forward engaged. The deployment of Kearsarge Amphibious Readiness Group, which returned home to Norfolk 2 days ago, offers a great example of utility, flexibility, and responsiveness provided by a forward-deployed Marine air-ground task force. The three ships of the Kearsarge ARG, the Kearsarge, Ponce, and Carter Hall, got under way in August of last year with 2,200 marines of the 26th Marine Expeditionary Unit embarked. The group deployed 1 month ahead of schedule in response to a disaster relief call for flood-stricken victims in Pakistan. Upon completing its relief mission in January, the 26th MEU, elements of the MEU, disembarked to conduct the fight in Afghanistan alongside 20,000 other Marines in the Helmand Province.

The balance of the MEU remained embarked on the Kearsarge group to conduct theater security cooperation engagements in Jordan, Kenya, Djibouti, and other countries in Sixth Fleet's area of operations. As the world's attention was drawn to events in northern Africa, the Kearsarge group was among the first to respond, conducting air operations in support of Operations Odyssey Dawn and Unified Protector. Then, when relieved by the Bataan ARG, which likewise got under way early in response to the crisis, Kearsarge returned home this week.

In all, in the course of their 8½ month deployment, the group and MEU conducted 1500 air sorties, 150 well deck evolutions, covering 3 continents, 8,000 miles of ocean. All the while, Marines of the 31st and 15th MEUs embarked on Boxer and Essex amphib groups were doing likewise in operations stretching from Japan, the rim of the Pacific, Latin America, and Africa.

The success of these operations, built upon the spirit of innovation and flexibility, has been the bedrock of the Marine Corps in the post-Cold War era. To retain this amphibious capability, our ship-to-shore tactical mobility is a key priority as the Marine Corps shapes its future force. The transition from operations at sea to operations ashore necessitates a mix of lift and combat vehicles, and to this end, as you described, the Marine Corps initiated the devel-

opment of a ground and combat tactical vehicle strategy in 2008 with the goals of fielding vehicles with the correct balance of performance, protection, payload, mobility, transportability, and fuel efficiency.

The challenge we've encountered, which will be an enduring and pervasive challenge, is that the lessons learned from OIF and OEF bring increased performance requirements to our vehicle programs, requirements that translate to increased procurement and operating and support costs, threatening to make new vehicles exponentially more expensive than the systems they're replacing.

So with the focus on balancing mission needs, force structure constraints, and affordability, a four-phase review has been conducted, as you described, where the early phases have identified impacts associated with the increased requirements and later phases are intended to address impacts to the amphibious force as well as vehicle requirements going forward.

An important outcome of this is as the Marines have looked at their total vehicle inventory they made a decision that the 42,000 vehicles they currently operate will be reduced by a total of 10,000 in the course of this, executing the results of this review.

In conjunction with the formulation of this strategy and the conduct of the Marine Corps structure review, two clear and important determinations were made: First, Secretary of Defense, Secretary of the Navy, and the Commandant have reaffirmed the necessity of the Nation to possess the full range of amphib operations, including forcible entry, which will require a self-deploying amphibious vehicle, able to project ready-to-fight Marines from sea to land in permissive, uncertain, and hostile environments.

This capability is a key to building power ashore and overcoming access challenges posed by either lack of improved infrastructure or the threat of an adversary. The Expeditionary Fighting Vehicle, or EFV, has been the program of record to provide this capability. However, over time as the EFV unit cost and operating and support costs grew, as production costs entered the budget alongside increasing costs for other vehicle programs, driven largely by increased vehicle complexity and survivability requirements, and as affordability assessments have become tempered by more realistic projections of post-OIF, OEF budgets, it was also determined that the program of record, EFV, was not affordable based on either procurement or operating and support cost estimates.

Cost projections for the EFV procurement alone would consume the projected budget for all Marine Corps vehicles, while placing great pressure on the balance of Marine Corps procurement for the balance of this decade, including critical upgrades to C4I systems, radar systems, and logistics systems, all of which are necessary to replace obsolete systems of the expeditionary force, all of which offer improved capability while reducing operating and support costs for the future force.

Accordingly, we have concluded we must revise our approach for developing and future amphibious combat vehicle, with increased emphasis on affordability to ensure we're able to field this capability in the numbers that would be required for amphibious operations. To this end, we've commenced the front end effort leading to an analysis of alternatives and technical demonstration of a new

amphibious combat vehicle, with the intent of mitigating cost, risk, and schedule associated with the new vehicle through an integrated portfolio approach: leveraging investments made in the EFV, engaging with industry to foster a competition for ideas and innovation, weighing the vehicle performance requirements across the larger portfolio of capabilities required to ensure successful operations, including amphibious ship operations, and building upon the long history and force structure inherent to the legacy amphibious assault vehicle.

We need to open the trade space for vehicle performance requirements and include cost as a requirement to drive affordability trades. Ultimately, we need to procure at a rate that brings healthy competition and efficient production.

Integrating the three separate programs that are in our program today, the Marine Personnel Carrier, the service life extension program and upgrades for a portion of the existing amphibious assault vehicles, and a new amphibious combat vehicle would create greater opportunity to field this critical capability within the challenging resource constraints that we're facing.

We recognize the significance of this course change relative to the EFV program and, further, we recognize that the challenges to our ground and combat tactical vehicle programs in total cannot be solved through this single program change, but will require similar focus across the vehicle portfolio. We're committed to conducting this work with full transparency with the Congress.

Mr. Chairman, thank you for the opportunity to appear before you today and we look forward to answering your questions.

[The prepared statement of Mr. Stackley, General Flynn, and Admiral Blake follows:]

Senator REED. Thank you very much, Mr. Secretary. I presume that General Flynn and Admiral Blake have no statements. Thank you very much.

We've included and provided everybody with two charts, and we've shared them with the panel. One is the basic procurement course for Marine combat ground vehicles, including the EFV for illustration purposes, and that is O and M costs.

[The information referred to follows:]

[SUBCOMMITTEE INSERT]

Senator REED. But the point really is, as we've talked before, is in a very few years we're looking at a huge bow wave, even if you factor out the EFV and assume you're getting a cheaper replacement, probably it's not that cheaper. It might be more efficient, more effective.

As General Flynn and I discussed and Secretary Stackley and Admiral Blake previously, this is not unique to the Marine Corps. The Navy has a similar challenge when it comes to trying to build ballistic missiles as well as—ballistic submarines as well as attack submarines as well as carriers, etcetera.

It really I think sort of has to focus our attention as to how are you going to sort of deal with this issue. Even assuming the EFV is cancelled or a replacement comes on line, the cost of these other vehicles that are essential are also increasing. So, Secretary Stackley, your comments, and I'd like General Flynn to comment and Admiral Blake also from his perspective.

Mr. STACKLEY. Yes, sir. Let me start with the specific question on the vehicles and then there's a broader issue there that wraps around all of this. As I mentioned in my opening remarks, the decision to cancel EFV to go to another amphibious combat vehicle with a greater focus on affordability is not going to fix this problem. It's not going to fix the vehicle problem. It's one step of what needs to be a number of steps in each of the program areas to create a more affordable vehicle portfolio.

As I described, General Flynn led an effort looking at vehicle inventories. That's another important piece here, which is reducing the total inventory of vehicles required, and I'll let him go into that in more detail.

But we have a significant looming challenge. When we look at our budget projections and we look at our recapitalization of many systems that we procured back in the 80s and 90s at higher rates of procurement, we can't look at the numbers and arrive at a one for one replacement knowing that the systems that we're fielding going forward are far more capable, far more complex, and therefore far more expensive.

So we are across the board looking at making tough decisions in terms of our investments, what are the priorities in terms of fielding new capabilities? Depending on what the capability is, we look at do we extend the service life of the legacy capability? Is that sufficient to meet the requirements? Do we buy new? When do we have to make that decision? And we go system by system into the specific list of requirements and challenge the requirements, cut back where it's the right risk decision, where the risk is, can you afford the thing, and you put a risk even procuring the thing versus getting some measure of increased capability.

So there's no single silver bullet. We're looking at—I will say this. There is no sacred cow. We know that there is no more money and we've got to live within the resource constraints we have and make the right capability decisions. Hopefully, we've got them correctly lined up against our overarching requirements. Then we've got to deliver in accordance with what we estimate to be the right price for those things.

Senator REED. Just one quick question and then I'll recognize General Flynn, is that you mentioned that part of this complete analysis is looking at legacy systems and effectively extending their lives. Does that go to EFV too in terms of a possible solution?

Mr. STACKLEY. That is not counted out. We're at the front end, as I described, of the analysis. We have over 1,000 AAVs. Part of the technology demonstration that we would like to get into is, using some of those AAVs as a hull form, let's talk about bringing off-the-shelf systems to that hull form and see what performance level we can get the existing AAV up to; and separately look at technology demonstration of an alternative hull form where we could potentially port those same systems over now to a separately developed hull form, and what does that point towards in terms of cost versus capability. In any AOA there's likely to be an alternative that says extend the existing vehicle, and we don't have cause to discount that on the AAV.

Senator REED. General Flynn, please.

General FLYNN. Mr. Chairman, it's always good to see one of your slides at testimony. This is the slide that keeps me up at night and this is the problem that keeps me up at night. This just includes our vehicle challenges, and if you notice the mountains in the sand chart are all in the out years. So this problem is coming and we're just not ignoring it.

The cost of vehicles and why things are getting more expensive—aircraft have gotten more expensive, ships have gotten more expensive. But on the ground side, because of our need for protection, whether it be in vehicles or individual protection, because of the battlefield that we're operating in right now, there's been an exponential increase in costs.

A couple years ago, about 5 years ago, it cost us about \$1500 to outfit an individual Marine. Today that's \$7500. The Humvee when we bought it in the mid-1990s, about \$50,000. When I look at replacements for a light vehicle, what I get across my desk is in the range of \$300,000. So there's an increased cost there.

The other part is I know we can't buy our way out of here. Over the past couple years the budget projections were more optimistic than we're seeing today. So we have to do more than just settle for the fact that it's more expensive. When we did the force structure review, we tried to design a force as part of Secretary Gates's and Secretary Mabus's guidance, was to tell us what the 21st expeditionary force in readiness was. That wasn't just about manpower. It was also how we are going to equip it.

One of the—because you can't buy your way out of this—was to say, okay, what should be the table of equipment for that force? The table of equipment for that force should be a crisis response TE, which would be lighter than what you see that force looking like in Afghanistan right now; and that you need to have the capability to heavy it up when you need it to be.

Very similar to what the Third Battalion, 8th Marines, did when they came off the 26th MEU. They deployed with a crisis response TE, but in their way to combat in Afghanistan they heaved up with MRAPs and MATVs.

So we're going to look at ways to reduce our vehicle inventory, by going out light for the normal crisis response missions, and having the ability, either through prepositioning on the land or by operational use of the Maritime Prepositioning Force, to be able to heavy it up from using those assets as well. That's why it was critical that we operationalize MPS to be able to do at-sea transfer of vehicles and selective offload.

The other thing is, as Mr. Stackley mentioned, we took a hard look at our vehicle inventory and we said: Okay, to reduce costs we're going to reduce the vehicle inventory by about 10,000 vehicles. That's a significant savings in replacement costs and in operating costs, and that's going to happen over time.

We also have to fix the requirements acquisition relationship. In other words, early on we have to be able to do those cost-capability tradeoffs early in our process. That's what we're going to do as we look for a solution to that, to the Expeditionary Fighting Vehicle and our approach to the Amphibious Combat Vehicle.

We'll also take a hard look at our table of equipment. And the other thing we'll look at, sir, is we are exploring everywhere that

we can for new ideas. You mentioned about the recapitalization of legacy equipment. We're looking at that for the Humvee. Is there a way we could do something, by either capsule technology that we talked about last year or structural blast challenge, also known as chimney, has a way of mitigating costs. So we're pursuing technology, we're pursuing new ideas, we're pursuing new concepts, all as a way to try to drive this down and to take some of the peaks off those hills.

But when you look at this chart, the only thing on there is vehicles. Vehicles exceed our total procurement dollars. I know we're using historical norm, but that was 30 years of procurement history, when at the beginning of those 30 years we had over \$4 billion in procurement for the ground side and some parts in the middle we had less than a billion dollars a year.

What I tell my people is: Okay, what makes us think that history is going to change? Like I say to them, sometimes you can have anything you want; you just can't have everything.

Senator REED. Well, thank you.

Admiral, in the next round I'll ask you to comment if you have comments. But let me recognize Senator Wicker for his questions.

Senator WICKER. Thank you.

General Flynn, let me ask you first about the 10 miles versus 25 miles that I mentioned in my opening statement. Has the requirement changed? Do you stand behind the requirement to conduct amphibious operations against a defended shoreline? Is the amphibious assault mission still relevant for the future, and what about the point I made about 10 miles versus 25?

General FLYNN. Senator, in context of that, it's not just about the amphibious assault. It's about amphibious operations across the range of military operations. When we did the recertification of the program in 2007, the launch distance that was used for the EFV was somewhere—was launched anywhere between 10 and 20 miles, and that was for the amphibious assault.

When we did, released the request for information for the replacement for the EFV, what we had in the RFI was a launch distance of 12 to 18 miles. That 12-mile mark is not a static position. That is normally where the ships would come in for the high-speed launch. And we think it's going to be dependent on a number of factors: our tactics, techniques, and procedures of using the sea as maneuver space.

If you're going to have to do a large amphibious assault, a two-brigade operation, there is no doubt that we'll have sufficient, or a significant amount of time, to be able to do shaping operations, because it'll take us about 60 days to assemble the shipping to be able to do that. So we wouldn't be able to do that—so there is going to be significant shaping operations that have to take place to knock down the threat as well.

Since we had the original requirement for the EFV, as Admiral Blake briefed last week, there have been significant improvements in the Navy's ability to deal with the threat. For the crisis that we're likely to respond to today, we're going to have to mitigate those risks, because you could have a high-end threat there, but it may not be the same volume that you would expect against a near-peer competitor. We're going to have to continue to go where they

don't think we're going to go, to use improved tactics, techniques, and procedures, and also to rely on the new defensive systems or integrated defensive systems that the Navy's bringing to the fight.

Senator WICKER. Okay. Thank you for your answer. If I could break that down, would you explain in a little more layman's terms what happened between 2007 and 2011, or I guess 2010, and what the difference is? It seems to me that 10 to 20 miles is not that different from 12 to 18 miles. So what happened? What is the reason for the change between the recertification in Nunn-McCurdy, which favored continuing the EFV, and today?

General FLYNN. One of the key drivers of the EFV was the ability to come up on plane, sir, and be able to go above 17 knots. It was to be able to do that high-speed launch. The EFV on the water in a planing configuration could do in excess of 25 knots. That capability's pretty expensive and that was one of the key drivers, to be able to hydraulically configure the vehicle, to be able to develop the engine thrust to be able to do it. So that was one of the—that part of the capability was a key expensive piece of that.

What we're saying in the future is to make the vehicle affordable we have to look at all the mission sets that the vehicle's going to have to perform, and then we're going to have to try to make those tradeoffs. Part of that tradeoff is do we need that level of speed? If we don't need that level of speed to be able to do the operation, can you reconfigure the program to be more affordable?

One of the risks there of whether you launch it—and again, the threat launch in the Nunn-McCurdy certification was 10 to 20 miles launch. It's the speed to be able to do that, but it's also the ability of the task force to be able to protect the ship when it comes in to do the launch. Now, they wouldn't stay there in a static position, but we're also launching aircraft, we're also launching other type of connectors at the same time.

Senator WICKER. Thank you, Mr. Chairman. We're going to take a second round.

Senator REED. Yes, sir.

Senator WICKER. So I think I'll defer to others and then come back.

Senator REED. Thank you, Senator Wicker.

Senator Blumenthal.

Senator BLUMENTHAL. Thank you, Senator Reed.

Thank you for all of your great work and the extraordinary dedication of the men and women who work with you and under you.

As I've listened to some of the discussion today and read the testimony and other material to prepare, from a very simplistic standpoint some of the variants here, maybe the major variants, are weight, protective value, and cost. I know that the MRAPs were once regarded as extraordinarily heavy vehicles and perhaps disregarded in their importance because of it.

I wonder if you could comment on whether vehicles with that kind of bulk, for protective value and other reasons, have become the new normal, whether there is almost inevitably an increase in weight, bulk, and whether that variant is inevitably tied to cost, or whether technology may enable us to reduce both?

General FLYNN. Sir, one of the key things on weight is weight is a factor in being able to mitigate under-belly blast. But in the end,

explosives tend to always win. You can always pack more explosives to do that. So the combination of the technology that you saw in the MRAP was not only weight. It also had a new hull shaping form, the single-V hull; your standoff distance from the blast. All contribute to your ability to mitigate blast and protect the servicemen and women inside the vehicles.

What we've learned over time is, though, with weight comes a tremendous lack of mobility and transportability. MRAPs—we had to field an MATV in Afghanistan because the MRAPs couldn't go everywhere because of the road structure and the ability to get around where you needed to go.

We also found in some areas of the country that our light armored vehicles worked very well, because they could go anywhere, and you can't put mines, you can't put IEDs, everywhere. So there's a degree of protection that comes with mobility.

What we've realized is, if we continue on this trend as an expeditionary force we may not be able to load ships any more with that much weight. So that's why we're looking for technology, and we've learned more in I think the last 5 to 10 years about blast than we've learned over maybe 2 or 3 decades. That's why in the future the single-V hull may not be the solution. A double-V may be the solution, and in some cases a rigid flat hull could actually be the solution.

That's why we're continuing to pursue alternative technologies to see if we can find that sweet spot, if you will, between transportability, mobility, and protection.

But you're right; on the basis of where we are now, sir, the more weight you have, the more expensive it is, but the lesser mobility and transportability you have on the battlefield.

Senator BLUMENTHAL. Are you satisfied, General, that the Nation is investing in the technology in sufficient amount and timeliness to do whatever it can to improve the joint light tactical vehicle and all the others that you vehicles under development to take advantage not only of what we've learned in the last 5 years, which has been impressive, but also what we need to learn going forward about the threats that may be in our future that haven't been in our past?

General FLYNN. Sir, everything I see is, down working on the requirements aspect for the Marine Corps, is we don't discount any idea. We've gotten help from Mr. Stackley, we've gotten help from DARPA. We go out to this one company that was working on structural blast channel, technology which is known as chimney. That could have applications to a lot of different things. The double-V hull. All of that has a tendency to take weight off the vehicle. We've also seen some advances in material science as well.

But we haven't found the silver bullet, so we're still looking. We're still discovering. But when we find something, sir, we see if it's going to work and we try to take advantage. I think we're at the stage of maybe seeing some successes in the not too distant future, but I don't see anything tomorrow.

Mr. STACKLEY. If I can just say something.

Senator BLUMENTHAL. Thank you, General.

Mr. STACKLEY. Weight is just one part of the solution, and really on our learning curve what we're focusing on is a total system de-

sign that provides the best solution. So there is a shaping of the hull. There is the element of weight itself provides a benefit. There's the degree of armor protection. But then, as General Flynn described, things like the double-V and the structural blast channel, there's an element of stiffness associated with the vehicle that's starting to emerge as this is an important characteristic that we need to consider in the design of the vehicles.

Ultimately, what you're trying to do is protect the Marines or soldiers inside the vehicle. So now you're starting to deal with designs of floors, designs of seats, and you're starting to get down to a level of detail that—I believe we still have a significant amount of learning to do as we put together optimal system designs. When you start to talk now about an amphibious assault vehicle, weight's a huge penalty.

So when we're looking at speed and range and you add weight as a—when weight starts arriving as a requirement for protection, now you're really trading off total system performance. So we need to look at the entire design, where the ultimate goal is protecting the Marine inside the vehicle and not go first to weight. Stiffness, there are a lot of ways to add stiffness without adding weight. There are armor solutions that are lighter in weight. In fact, we have some armor solutions that float. Those are more costly, so there's a cost element that we wrestle with.

So this front-end design work that we're doing for the amphibious combat vehicle, we're trying to bring all of that innovation to the table and look at a total system approach to that protection thing, which does drive costs and does trade off in performance in other areas of the vehicle.

Senator BLUMENTHAL. Thank you very much.

Thank you, Mr. Chairman.

Admiral BLAKE. Sir, if I could just add to that, when we look at the issue from the Navy perspective, you've got ships with expected service lives anywhere from 25 to 40 years, and so when we build a ship and we're going to build it for a period of 25 to 40 years, what I have to do is I have to sit down with General Flynn and we have to look at it and say, all right, we've got to have give and takes here, because the displacement of that vehicle is what it is and weight is a critical factor.

So when we have to sit down and we look at it, if a vehicle increases in weight then we have to figure out where are our trade-offs, because we've still got to get that composite force of Marines ashore and get them ashore safely.

Senator REED. Thank you, Admiral Blake.

Senator Ayotte.

Senator AYOTTE. Thank you, Mr. Chairman. I want to thank all of our witnesses for what they do for our country.

I wanted to follow up, Secretary Stackley, on a question about the EFV program termination. As part of it, we know that we invested approximately \$3 billion. Then part of it is this \$185 million that we have to pay to terminate the program. I wanted to understand that piece of it and understand it from the perspective of going forward what is it that we need to do to inform our acquisition process? Also, thinking about it from a perspective of, you

know, at one point being someone years ago, because then I became a prosecutor, I used to negotiate private contracts.

Was it something in our terms that we need to be conscious of in terms of how we're contracting for these types of vehicle, obviously acquisition overall, frankly, where we can put ourselves in a better position to deal with the cost issue, but also to have more favorable terms for our country, so that we're not put in a position where we actually have to pay money to terminate a program.

So if you can help me with that, I'd really appreciate it.

Mr. STACKLEY. I want to help you 100 percent here. My view is termination costs should be approximately zero.

Senator AYOTTE. Thank you.

Senator SESSIONS. Particularly in this program, with, I'll call it, knowledge up front. There are some—there are termination costs associated with a major program if you slam the door shut. You have a large work force and the company has responsibilities to that work force in terms of everything from relocation; they might owe them severance; they might have 2 months pay they have to pay out. So there are definite costs associated with termination if it's not managed.

What we've attempted to do here is to manage the termination. So we've done a couple of things. We've taken a look at the work force. We've taken a look at things like tooling and material. Those have to be disposed of at the end of the contract. So we've put a plan together on what do we want to do with these things, and we work our way out of EFV by getting value of the dollars that are otherwise considered to be termination dollars.

So the work force, for example; I've given a Warren Act notice. General Dynamics would have to provide 2 months notice to folks that, you're going to be laid off. And there's a bill, and if they're not being gainfully employed then we get nothing for that cost. So we took a look at the work force. We took a look at where we are in EFV, and we want to harvest as much of the learning and technology that we invested in that program as possible to help us to transition to the amphibious combat vehicle.

So we put together a plan that matches the rolloff of staff at General Dynamics with harvesting of technologies from EFV, which includes everything from subsystems on the EFV that might apply to the ACV, to taking the vehicles that are in piece parts and finishing their testing, so we actually get the test results that will inform the ACV.

So you could call it a termination cost, but we're calling it a smart termination as we exit the program, so that we get value, the maximum value out of the program as we exit, and we don't incur unnecessary costs associated with terminating.

I don't know if that answers your question or not.

Senator AYOTTE. It does. I think what we're all trying to get at is, how can we avoid this? I mean, what are the lessons learned from this experience, because we're not picking on the Marine Corps in all of this because we've seen this in other weapons systems across the services, so that we can—whether it's putting more of the burden on the contractor in terms of if they don't produce the product that we want that they bear more of the risk—just in terms of, obviously we've been talking about the acquisition proc-

ess, but what are some of the lessons learned overall so that we can make sure that we avoid these situations again?

Mr. STACKLEY. Yes, ma'am. First, there are different types of termination. I'll just be frank. In the case of the decision to terminate the EFV program, as discussed, in 2007 we had the Nunn-McCurdy. At that point in time we decided we're going to continue with the program. We restructured it, and since 2007 General Dynamics has been performing in accordance with the contract, in accordance with the plan.

So this isn't in 2010 their performance has led us to terminating the program. This is the Department looking at the future costs of the program and saying, we can't get there from here. So there's not fault on the contractor here. What he's been doing is he's staffed up to ramp into production, so he does have tooling. He's got infrastructure. He's got people on the program.

If you're going to close the program, if you try to close the program immediately, there's a lot of work in process. He's got subcontractors throughout the country who are going to be invoicing for the work that they're doing, all allowable costs on the contract that would have to be paid. So that's just a practical matter of we are terminating, we're limiting our exposure in that termination, but we do have liabilities for this work that was started before the decision to terminate.

Senator AYOTTE. I appreciate that. And I guess at the end of the day really where I'd like to be is, how do we avoid this from happening again? So maybe that hasn't been—I know we've been talking about it, but when we look at the fiscal state of our country and the need that our armed forces have—and this is, I think this is just one example across. We've seen this on multiple areas at DOD.

Mr. STACKLEY. Depending on the contract type, we have clauses and terms and conditions that protect the government's liability. Typically, for example, for our cost-plus contract, which development contracts are, the clause would describe that there's a limitation of funds. So the government's liability is limited to the amount of funds that are put onto a contract. That causes the contractor to have to measure, gauge, and ensure that he doesn't go spending money beyond the limitations that are imposed in that case.

On a fixed price contract, he owes us the deliverable. We owe him the amount of money we signed up to; he owes us the deliverable. In that case, if we terminate—typically on a fixed price contract we're fully obligated at the front end. If we terminate while all that work is in place, then you're stuck with a legal review—first you try to do a negotiation—a legal review in terms of what his actual costs are versus what he's billed and the differences inside the termination.

But we do not encumber Congress, for example. We don't encumber future Congresses on things like termination or cancellation without notifying you and telling you what the amount of that liability is in advance.

Senator AYOTTE. I appreciate your answer, Mr. Secretary.

My time is up, but I still—I don't have a clear picture on when you have a situation like this you have to take the lessons learned. We need to take the lessons learned from this, all of us, and I think

we need to do it across the services. So I don't have a clear picture in my own mind how we avoid this again.

General FLYNN. Ma'am, real quick, I think one of the key lessons learned is we have to do the cost tradeoffs early on in the requirements process, not in the acquisition process. So as we're looking for the capability, those cost tradeoffs have to be done in requirements development early, so that you're not in acquisition, so that you know what technology you're asking and you're not overreaching, and that you understand the costs.

That's what's going to be different about how we're approaching the ACV, is that we've set up the method and the methodology right now to inform the requirements process, with cost as an independent variable.

Senator AYOTTE. Thank you, General.

Senator REED. Thank you, Senator Ayotte.

Senator Hagan.

Senator HAGAN. Thank you, Mr. Chairman.

General Flynn and Secretary Stackley and Admiral Blake, thank you for your work and being here today.

I wanted to talk about the amphibious ship requirement. I know that in the Marine Corps's stated amphibious ship requirement remains 38, and the Nation currently has an amphibious fleet of less than 30, despite an agreement within the Department of the Navy to maintain a minimum of 33.

Amphibious ships should not be decommissioned earlier than their expected service life spans, obviously, without replacements. I'm concerned that the Marine Corps will not have sufficient amphibious capabilities to fully support the combatant commanders' requirements within an acceptable level of risk.

I'm also concerned that the Marine Corps will not have sufficient amphibious capabilities to meet its demands for operational deployments. Maintaining a sufficient amphibious capability I believe is critical in order to project power, to evacuate essential and non-essential U.S. personnel stationed overseas, and engage in crisis response and humanitarian relief operations.

General Flynn, can you share your thoughts regarding the impact of not having the minimum amphibious ship requirement and how does it affect the Marine Corps's ability to respond to crises, such as what we've seen recently in Libya and in Japan?

General FLYNN. Ma'am, as you know, we've agreed within the Department on the 38-ship requirement, and that is both for what we would need to be able to do amphibious assault operations at the high end, but it's also that inventory of ships is what is needed to do what we're actually doing today. So it's not based on desires or needs. It's actually what's being employed today.

So with 33 ships, with a 33-ship inventory, you could meet both your day to day needs and your larger requirements. When you get below that, obviously you take on additional risk in terms of availability, especially as you heard from the operations that are going on now, when you're surging.

So where are you going to pay the bills? You're going to pay a bill in maintenance. Ships need to have time to be maintained, and if they don't have the time to be maintained we could have a challenge in getting them to their 40-year service life. The other place

you pay the bill is in training, training of the ship and the crews together. So there is the ability to happen there. And what we're going to see for the first time in recent time when the 11th Marine Expeditionary MEU deploys this summer, the first time all ships will be together is when they deploy, and that's—so that's the additional risk that you take.

So 38 was the requirement, 33 was an acceptable level of risk, and the further you get away from that the more risk you assume in being able to meet your day to day requirements, and where you pay the bill is in maintenance and in training.

Senator HAGAN. Where are we right now?

General FLYNN. I think we're at 30 right now in the inventory, ma'am.

Senator HAGAN. Well, I'm concerned about the number. In last year's National Defense Authorization Act, Senator Webb and I included report language mandating a report on the expeditionary amphibious warfare ship force structure. The report directs the Secretary of Defense to complete an operational capabilities-based assessment that reviews and reconciles the amphibious requirements, the ship retirement schedules, as you mentioned, and the 30-year shipbuilding plan. Can you give me, I guess Secretary Stackley, the status of that report?

Mr. STACKLEY. Ma'am, I'm going to have to take that one for the record.

[The information referred to follows:]

[SUBCOMMITTEE INSERT]

Senator HAGAN. Okay.

Mr. STACKLEY. Let me assure you, though, I'll take it for the record and we'll pull this thing forward and make sure it gets back to you in a timely manner.

Senator HAGAN. Any comments on why we have fewer than the number of the required—or the minimum required, and why has I guess the Navy continued to decommission vessels from the amphibious fleet despite the shortage?

Mr. STACKLEY. Yes, ma'am. A couple pieces there. One, we're balancing across the ship portfolio in total. The commonly referred to number is a 313-ship Navy, which that dates back about 5 years when that requirement, that total force structure requirement, was established. At that time we were at about 280 ships. Today we're at 287 ships. So in total we're far below what we've established as a requirement class by class.

Inside of the amphibs themselves, we've got two specific amphibious shipbuilding programs ongoing, and we've had challenges in terms of schedule on those programs. So part of the shortfall is associated with delays in delivering amphibious ships, both the LPD-17 and—

Senator HAGAN. The schedule problems being what?

Mr. STACKLEY. Ship delivery schedules. Frankly, it's been some performance issues at the shipyards that have driven delays on the LPD and LHA class ships. It's also been a long-term impact associated with Katrina on the—all of our amphibious ships today are built at Ingalls and Avondale on the Gulf Coast. There's been a long-term impact associated with Hurricane Katrina on everything

from schedules to productivity, and we're still working our way back from those impacts.

Then the third element—that's the new construction side. Then the third element is the decommissioning side. We spend a lot of time reviewing decom schedules, and each decision in terms of decom is, I would say, made on its own merits or otherwise in terms of how many deployments does that ship have left in it, does it require another service life upgrade to get another deployment, so what's the balance of investment required to keep the amphib on line versus what's the useful service we would get out of it.

I can only assure you that there's a lot of tough discussion and debate with each of those, because we are short, because we're below the 33 number, and we're not going to be able to quickly get back to 33 just through new construction. So we've got to look at the existing amphib fleet, amphib ships in the fleet, and do what we can to make sure that we get the service life that's required out of them.

Senator HAGAN. Thank you.

Admiral BLAKE. Senator, one of the issues that we have taken up is because of the fact that we recognize that there are delays in the delivery of, say, the big-deck amphib. We have already looked at and are putting in place funding so that we can extend ships that are currently on service and not decommission them, delay their decommissionings, if you will.

But that comes at a cost and that's what we work. We recognize that we need to meet the commitment to put the number of amphib out there in order to meet the requirement. We also recognize that, because of the level of OPTEMPO that we've had over the past several years, that we have to—have now made a concerted effort to make sure that not only do we have to look at extended service lives, we have to get the ships to their expected service lives.

One of the best programs I can give you is the LSD-41s with their mid-life program. We've actually put a tailored package together in order to ensure that we get those ships to the end of their service lives. So we've actually tailored it for each of those ships to get them out there, so that they can meet the end of their service.

In addition, we're also looking at ships as they're coming up at the end of their service and seeing if we can work it that we can get additional, if you will, life out of them. But again, that comes at a cost and we have to do the tradeoffs.

Senator HAGAN. Thank you.

One more question?

Let me ask about the Humvees. As you know, the use of the Humvees is limited in theater due to the survivability and the crew protection concerns. Obviously, with the mine blast and the IEDs, the Humvees have been exposed to underbody, these underbody attacks, which really concerns me greatly. The current Humvee underbody protection levels are inadequate in meeting the current and emerging threats that our troops are seeing.

I'm very supportive of anything that we can do that can increase the survivability, the mobility, and the operational utility of our Humvees. In last year's authorization bill, I inserted language re-

questing the Army and the Marine Corps to report their Humvee acquisition and recapitalization plan. In the Marine Corps the report mentions that an armored capsule system was evaluated as a possible survivability upgrade for the Humvee, and the report goes on to say that, despite doing well in blast testing, challenges were discovered integrating it onto the current Humvee chassis, including the automotive and performance issues.

General Flynn, can you describe some of the challenges in integrating the capsule onto the Humvees?

General FLYNN. Yes. Yes, Senator. We're trying to look at a cost-effective way of making our light tactical vehicle fleet last longer and be able to perform in the current threat environment. We looked at the capsule. The idea was to build a survivable capsule that could fit on an existing frame, using the existing drive train and power plant. What we found is when we married the two up we did significant frame damage when we took it out and tested it out in the field.

Now, it did well in blast testing. So now we have to look at what would be the cost of redoing the frame and would we have to redesign a frame?

A similar effort is what we're looking at in structural blast channel, the chimney, is that is again taking a look at an existing frame, an existing power plant and a power train, and seeing if we could recapitalize that way. Where we're at in that, it is doing well in its blast testing. We have it—recently we took it out to the Nevada Automotive Test Center and we're seeing how its frame has done. In some cases we've seen some frame damage.

Now, we have to analyze and say, okay, what's causing the frame to be damaged? Is it weight? Is it how we're marrying it up? Is it how the frame was manufactured? Was it manufactured to the right tolerances? So we're all in the information-gathering, information analysis part. But we definitely are trying to pursue some way of recapitalizing the light vehicle fleet at an affordable cost and getting us an acceptable level of protection.

Senator HAGAN. Thank you, Mr. Chairman.

Senator REED. Thank you, Senator Hagan.

I think one of the obvious impressions in the questioning of everyone is that these are a series of very critical decisions that are interrelated in so many different ways—the Navy shipbuilding program in terms of accommodating whatever you decide to build as an amphibious assault vehicle, etcetera.

There's another aspect of this. The Nunn-McCurdy breach, at that point there was the decision to reduce the total number of EFVs and to complement them with the Marine Personnel Carrier, and you face a milestone B decision next year, basically. That raises the issue again of what is the relationship between the new assault, amphibious assault vehicle, and the Marine Personnel Carrier? Is that part of the analysis?

Then a whole set of issues: One, if you can reduce the speed and increase the armor of the assault vehicle, does that mean it can act in some respects as a replacement for in certain cases the Marine Personnel Carrier, that you can reduce the total there?

But the general question is—and I know General Flynn has been extraordinarily, I think, thoughtful about systems engineering,

making decisions early. But there's a whole set of decisions that go not just to the replacement EFV, but to Marine Personnel Carrier, LCACs, and a host of other things.

General Flynn?

General FLYNN. Sir, when we cancelled EFV the best option at the time that we had was to simultaneously pursue potentially three alternatives or three programs together. One was the new Amphibious Combat Vehicle, one was the MPC, and one was service life extension to the AAV.

I don't have the final answer for you as to say in the future are we going to be pursuing all three, two, or one. We're trying to—we're working through the data right now. We're working through the analysis of alternatives to do that. The MPC, as you know, was added to the mix as a way of trying to get cost back then under control for the EFV. It was a less expensive vehicle, and we were trying to meet the requirement, the cost requirements, back then by doing a mixed fleet.

That's back on the table now and we have to do that quickly, because I know in the current program there is a milestone B decision, I think in fiscal year 2014. So we need to get to those answers quickly, and that's one of the reasons why as we pursue our way forward on this we need to be able to do an AOA, an analysis of alternatives, faster than we have traditionally or historically done. In the past it's taken 18 months to do an AOA. We need to do that in about 9 months. And at the same time, in parallel we need to be able to be pursuing some type of technology demonstrator so we can determine what the real requirement is going to be, because right now I wouldn't commit to all three and say we're definitely going to do all three. I don't think that would be wise at this time because I don't have the data to back up a decision like that, sir.

Senator REED. Mr. Secretary, you've got \$12 million in the budget for the AOA. Is that enough, given the complexity of evaluating several moving parts?

Mr. STACKLEY. Yes, sir. We have a total budget—the budget that you're looking at today was best estimates put together in a pretty constrained period of time, and I can guarantee you we've got adjustments coming. The \$12 million associated with—an AOA by itself doesn't require a whole lot of money.

Senator REED. Right.

Mr. STACKLEY. So I don't think the AOA is going to be the issue. It's going to be some of the other costs. We have a lot of talent from the EFV program that we don't want to lose. So what we've got to do is get productive work for them consistent with the time line that General Flynn described for technology demonstrator. I think that's really where we want to be investing dollars, is on identifying those mature technologies that would apply to a future amphibious vehicle.

The AOA, the 9-month time line for an AOA, is more aggressive than most, but we're not starting standing still. We're not starting with a clean sheet of paper, and the last thing we want to do is disband the corporate knowledge that we've got and have to bring brand new folks in and climb the learning curve for the AOA. So we want to leverage the hot operation that we've got from EFV as we transition.

Then the question on the MPC and its role. We're bringing all three of these—the AAV SLEP, the MPC, and the ACV—we're bringing them all together, same room, same group of people managing the capability, recognizing that we've got one pot of money that's going to have to manage both the development and ultimately procurement of the vehicles and the necessary upgrades.

So do we have an MPC plus ACV fleet? We're going to look real hard at whether or not that makes sense.

Senator REED. Another aspect here is LCAC is something you're looking at with a new ship-to-shore connector program. That's part of—is that group going to be in the room, too? That begs the question, too, and then obviously the Navy in terms of the amphib fleet, the basic delivery vessels, they'll be in the room, too? Are we looking outside the proverbial box at all this interrelated set of issues and make a comprehensive presentation?

Mr. STACKLEY. Yes, sir. Let me describe a couple things there. We do have the LCAC SLEP is wrapping up now and we're going out very shortly here with an RFP for the ship-to-shore connector. Its set of requirements are set and the things that the ship-to-shore connector would be carrying are well set. So we don't see the ship-to-shore connector's performance requirements changing as a result of the discussion with regards to the amphibious vehicle. But it might impact the quantity that we end up procuring.

Senator REED. Thank you.

Just one other question, then I'll recognize the ranking member, and perhaps a broader question might sort of be come to. As General Flynn said, we'd like to think that all of these decisions are driven by threats and doctrine, but we know there's a budget lurking around every corner that has to be met, too. But part of your conclusion is going to be based on can the Navy neutralize the opposition on the shore, successfully get the Marines either 25 kilometers or 10 kilometers from the launch point in an environment of—a changing environment, air threats, cyber threats, etcetera.

So just if you could comment briefly on that, Admiral Blake. And then specifically, both you and Secretary Stackley about the mine countermeasure module, because some areas which we would anticipate a potential use of amphibious forces the most significant threat would be mines. So Admiral Blake, then Secretary Stackley, then I'll recognize Senator Wicker.

Admiral BLAKE. Sir, I think what you're referring to in general terms is anti-access. I think the Navy has put in place a number of programs. I'll only hit a couple of the highlights. We won't go delving down into every detail. But I think we've put together a family of systems. We've bundled them together and we've said this is how we think we can engage, if you will, in the anti-access environment.

One of the premier ones would be NIFCA, Naval Integrated Fires Counter-Air. That program is, as I said, is a family of systems. It comes in two varieties, if you will, from the air and from the sea. There are key components within that, everything from the E-2D, the aircraft, to the SM-6 missile. And then you're going down, of course, to the Aegis ships, Aegis cruisers and destroyers. I think that's how you sort of look at it, and we are evolving that.

The second one I would mention is the Surface Electronic Warfare Improvement Program. We recognize that we've got to make advances there because of the proliferation of systems, and that is one of the areas where we will have, if you will, three levels, and each one builds on the other so that we put it as the potential adversary evolves so do we evolve.

You mentioned mine warfare briefly. We recognize that the LCS module for the mine warfare is a key component and we have to get it out there. We have to get it out there because we've got to get the man or the woman out of the minefield. Right now the way we deal with it is we deal with it the individual has to go into the minefield in order to clear it. We've recognized that.

One of the key components of that program for the LCS is that we get that individual out of the minefield. If we don't, then we are going to have to look at the current capability we have, which is in programs like the Avenger class, which keeps a man in the minefield. Then we recognize we'll have to extend that program. We do not want to do that. We want to get the LCS modules out there.

Indications are now that we are going to get that module out there on time. So we believe we have a way ahead and that we will address the issue, as you put it.

Senator REED. And on time? Just for the record, Secretary Stackley, on time?

Mr. STACKLEY. Yes, sir. Let me add on to what Admiral Blake said. The MCM mission package actually gets delivered in phases. So we have a four-phased approach. It's incremental capability, and so the first increment IOC is in 2013. The key pieces we have there, we've got the remote mine-hunting system, which has gone through Nunn-McCurdy and has been rebaselined, restructured to improve its reliability, but all the other performance parameters have been met for the RMS.

The other elements are: a sensor system, where we've got a sensor system today that's operated off of an aircraft, that provides orders of magnitude greater capability than what the current MCM fleet provides. What we're working on is we fall short of the KPP by about 5 percent. So we have a system that's order of magnitude more capable, doesn't meet the full KPP. So we're looking at, okay, let's test it with what we've got, let's field it with what we've got, and let's figure out is it worth the added investment to get the other 5 percent.

Senator REED. "KPP" is what?

Mr. STACKLEY. Oh, I'm sorry. Key performance parameter. So this has to do with sensing depth and probability of detection.

So the first increment, right now we're still holding to a 2013 date. Then the subsequent increments provide added capability that—as I described the first capability, the first increment will provide a capability equivalent to your MCM fleet. The added capability, what it will do is increase your sweep rates, so basically you can cover a greater area over less amount of time, and also allow us to retire the 53, the airborne mine countermeasure program that we have today.

So many piece parts that have to be integrated together. One of the things that we've done there is we've taken the piece parts and

put them all inside of one program executive officer for a Littoral Combat Ship. So we're bringing the mission packages, the ship, the test and evaluation team, and the in-service team all together in one organization, and we have to ensure it's robustly funded.

The history of this, these systems, is when these ships were struggling the funding was cut on the mission package side. Now we've got the ships up in production, we've got this lag that we've got to overcome on the development side, and we're focused on that because it is a priority.

Senator REED. Thank you.

Senator WICKER.

Senator WICKER. Mr. Secretary Stackley, the decision to cancel the EFV, how close of a call was that?

Mr. STACKLEY. Sir, to be honest, I wasn't part of that decision.

Senator WICKER. Okay, that's a fair answer.

If we had proceeded on with the EFV, when would the first vehicles have been available for our troops?

Mr. STACKLEY. 2016. We had about another year, this year plus a year in terms of development, and then we go through the operational testing, to lead to initial capability. The full operational capability would be about a decade later.

Senator WICKER. So what is the answer?

Mr. STACKLEY. 2016 for the first, the initial capability.

Senator WICKER. Available for the troops.

General FLYNN. We would have had—sir, to make that clear, in 2016 we would have had one set for a battalion, but it would have taken us to 2026 to buy the whole 570-some odd vehicles.

Senator WICKER. Okay. And if we—best guess, if we instead moved to the ACV concept, when will they be available for the troops?

Mr. STACKLEY. Well, let me describe that—I talked about the three different capabilities that we're looking at between the Marine Personnel Carrier, the AAV SLEP, and the ACV, the Amphibious Combat Vehicle.

Senator WICKER. Right.

Mr. STACKLEY. We're looking at tradeoffs between those three capabilities. So for example, what we'd like to do is move forward on a technology demonstrator for the ACV, about a 2-year effort, to take a vehicle and demonstrate its capability, and see if we can go from there into the completion of development, where you'd have that same initial operational capability that was 2016 for an EFV, could be in the 2017, 2018 timeframe.

So you're really in the same ballpark in terms of time that we had with the EFV program, and what we would do is as we look at this, do we want to go forward with the Marine Personnel Carrier as a stand-alone program, that would slide left or slide right depending on what we decided on ACV.

Senator WICKER. As you know, the prime contractor of the EFV very vigorously disagrees with the decision of the Department, and they have an estimate saying let's finish what we've started with 200. And they estimate that doing so would cost \$4.6 billion, and that would be less than the combined cost of termination and replacement, which all told would be \$6.1 billion. What do you say to that?

General FLYNN. Sir, first of all, 200 vehicles doesn't meet the requirement. 200 vehicles does not give us the capability to do a two-brigade operation. It falls short in the number of vehicles.

The other part is the operation and maintenance cost of those vehicles. It's not just the procurement cost of the vehicles; it's also the operation and maintenance cost of the individual vehicles, which was another reason why the decision was made to cancel the program.

Then we'd also have the challenge then of having to have a mixed vehicle fleet with different capabilities. So 200 vehicles does not meet the requirement and it gives us a mixed—

Senator WICKER. You might have that under this three-pronged approach.

General FLYNN. No, sir. The three-pronged approach, the AAV SLEP would have been designed to give us the time. Even if we were fielding the EFV, we would have had to have invested in extending the life of the AAV because of the time limit that it would take us to go from initial operating capability in 2016 to full operational capability in 2026. So we would have to do an AAV SLEP along the way to bridge the gap.

Senator WICKER. So there's not much difference, in your judgment, in the cost of the AAV service life extension program, or SLEP, based on the termination of the EFV? You would have had to do that in either scenario.

General FLYNN. We would have had to have done some type of service life extension program in survivability, mobility, communications to get the vehicle mix, because we would have only been purchasing 50 vehicles a year.

Senator WICKER. Gentlemen, I'm learning a lot today, and I guess that's the point of these hearings. It occurs to me that we really don't know how much we're going to save because of this decision to cancel the EFV because we don't know what we're going to replace it with.

I think, General, your testimony is that of the three-pronged approach to where we go from here, we're not sure which ones we're going to do; is that correct?

General FLYNN. That would be correct, sir. I'm not ready to tell you what the specific vehicle mix would be until I got a better idea of the cost-capability trades that we could get and the capabilities of each of those individual programs.

Senator WICKER. Mr. Secretary, what's your most informed estimate for this subcommittee of how much we're saving because of the cancellation of the EFV program?

Mr. STACKLEY. Yes, sir. Let me—we're going to do these all in constant year dollars. Today the estimate for EFV at 573—not 200, at 573—is north of 17 million. It's approaching 18 million per vehicle. Now, we're going to put requirements on the table and do some trades to get to a more affordable vehicle. You're not going to get the same capability at any significant cost reduction. So we've got to trade off capability.

Senator WICKER. Yes, we're going to get a slower vehicle and a less capable vehicle for sure.

Mr. STACKLEY. Yes, sir. Yes, sir. What we're going to do is, as General Flynn described, get requirements and acquisition in the

room at the same time, open up, unlock the requirements, and price out a more affordable vehicle, where you establish, you take those key performance parameters on things like speed and range and level of protection, number of Marines that you're carrying, and instead of saying it will be the following, we create a range. So there's a range of speed, for example, that we're going to put on the table and that will influence everything from the size of the engine, it will have an influence on endurance and things of that nature.

So in doing that, we've gone one time through in terms of a rough, just a rough, to figure out no-less-than values, what would it cost. While we are talking about an 8 to \$10 million vehicle, the first cut going around is more like a 10 to \$12 million vehicle. So there's that. Today if you asked me a best-informed estimate, I would tell you that we're going to be going from an \$18 million vehicle to a \$2 million vehicle based on what we know today, but we're very, very early in the process with the focus on figuring out, okay, how do we get that cost down further.

But we're going to trade of capability to do that. We're going to trade off speed, and we're looking at things like a mix of ACV craft, vessels, for example, where they don't all have to have the same level of capability when it comes to things like command and control, communications package, or maybe even lethality when you get to the gun system that's embarked on board.

General FLYNN. Senator, one area where we've learned a lot is in the area of protection. So there is an opportunity right now to take advantage of everything we've learned on protection in the next hull design, because if we have three big areas that we're looking at right now as to how to make this affordable in terms of capability, obviously it's performance over the whole mission set, not just the ship-to-shore transit, which is water speed, but also the performance on land and the protection that's needed.

By some of the other discussions we've had today, hull design could change significantly in this, and that's why it's important that we pursue a technology demonstrator to see if that protection's going to be different, because that's one thing that's changed a lot over the last 10 years, is our approach to protection and the different technologies available to do it.

Then the other, third factor that we have to look at is habitability, which also affects how the Marines do in the back of the vehicle. That's one of the reasons as the program cancellation is proceeding one of the key things we're going to do with the technology demonstrators or the system demonstrator vehicles this summer is we're going to do some habitability experimentation to see how the Marines embarked on the vehicles do in different lengths of time in the back of the vehicle. Air quality, air temperature, all of that affects your ability to fight when you get out of the vehicle.

So we're going to take a look at that, and that's going to inform some of these tradeoffs that we're going to have to make, so that we can get from an \$18 million vehicle somewhere down to a 10 to \$12 million vehicle.

The other point about the 200 vehicles, sir, is the cost would have grown from \$18 million to well over \$20 million a vehicle.

That was one of the other reasons why we didn't think that was affordable.

Senator WICKER. You heard Secretary Stackley's answer to my question about whether this was a close call. He said he was not really involved at that level. How close of a call was it in your estimation?

General FLYNN. Sir, I don't know how close of a call it was, but I would tell you it was difficult. All these decisions are difficult. It was a difficult decision because we realized how much we had invested in the program. But there was also a realism that, could this be affordable. The graphs that we have here, we were facing a pretty stark budget reality. So the reality was when you look at where we were on budget, whether we could afford the capability, and what had changed over time in terms of threat, in terms of the Navy's ability to do it.

Although it was a difficult decision, I believe it was the right decision to do it, sir.

Senator WICKER. If it turns out—and I'm winding up, Mr. Chairman. If it turns out it was a \$15 million vehicle instead of 12, it becomes a dicier choice, doesn't it? And that's not outside the realm of possibility.

Mr. STACKLEY. Sir, let me. It's not outside the realm of possibility, but I don't see us heading on that course. What you end up doing is—because affordability's going to be a heavy factor in determining the design of the amphibious combat vehicle. So if we find ourselves ending up in the \$15 million per vehicle range, we're going back into the requirements to figure out how do we get that cost back down so we can get the quantity that's needed to perform the mission.

But today we don't have information that is looking at a \$15 million a copy vehicle.

Senator WICKER. Thank you, Mr. Chairman. This has been most informative and it does occur to me that we're well served by these gentlemen in front of us.

Mr. STACKLEY. Can I take one more piece on? This discussion today, this is beyond just a hearing and beyond just a briefing. What we're serious about is doing this work as transparently as possible. We set up a war room just for having discussion across the table, sometimes government to government, potentially down and the road with industry. But this story's going to continue to unfold with time and we intend to make ourselves available as your questions continue. I know it's been a hard spot in the past and we want to get to a better place in that regard.

Senator REED. Let me associate myself with the thoughtful comment of my colleague that this was a very productive, I think, hearing, as a result of your questions particularly.

I want to thank you, gentlemen, not only for your testimony, but for your service. Also, there may be other colleagues that have written questions which will be submitted, and I would ask everyone to get those questions in, let's say before next Wednesday for your prompt response. I know you're taking one for the record for Senator Hagan already.

Mr. STACKLEY. Yes, sir.

Senator REED. But gentlemen, thank you very much for your service and for your testimony.

With that, the hearing is adjourned.

[Whereupon, at 4:09 p.m., the subcommittee adjourned.]