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THE ROLE OF SURFACE FORCES IN PRESENCE, DETERRENCE, AND WARFIGHTING

HEARING

BEFORE THE

SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

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[There were no Questions submitted during the hearing.]

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[There were no Questions submitted post hearing.]

THE ROLE OF SURFACE FORCES IN PRESENCE, DETERRENCE, AND WARFIGHTING

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES,
Washington, DC, Wednesday, April 15, 2015.

The subcommittee met, pursuant to call, at 2:02 p.m., in room 2212, Rayburn House Office Building, Hon. J. Randy Forbes (chairman of the subcommittee) presiding.

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

Mr. FORBES. I would like to call this hearing to order.

And before we get started, I want to welcome my newest member of both the full committee and the subcommittee, Mr. Russell from Oklahoma, who has had a very distinguished career in serving our country.

And we are delighted to have you both on our full committee and on the subcommittee. Look forward to your input and help as we move forward with this markup and other things the subcommittee will be doing.

Today the subcommittee meets to discuss the role of surface forces in presence, deterrence, and warfighting. I am particularly pleased to have two distinguished seapower expert witnesses to testify before our subcommittee.

Mr. Bryan Clark is a Senior Fellow at the Center for Strategic and Budgetary Assessments, and Mr. Bryan McGrath is Managing Director at The FerryBridge Group.

Thank you, both, for being here and testifying today. We always enjoy reading your material, and we are looking forward to hearing you today.

This committee's last hearing discussed the evolving maritime security report in the Navy's recently released report, "A Cooperative Strategy for 21st Century Seapower." Today we examine surface forces in this new environment and how we accomplish the transition from a defensive to an offensive surface force capable of operating and achieving objectives both independently and in cooperation with other forces.

Looking at our naval surface forces today, we see a multitude of new capabilities are being integrated into the fleet. We are incorporating better sensors, including an expanded air and missile defense radar that is 30 times better than current technologies, and a new digital electronic warfare capability to deter, detect, or to better detect, decoy, and defeat incoming missiles.

We are continuing to expand our antisubmarine warfare capabilities, including the addition of multi-function towed array and a variable depth sonar on our small surface combatants that will be able to better track even the quietest of submarines.

We are fielding new missiles to better pace the threats we face, including a long-range antiship missile and better short-range missile capabilities resident in the enhanced Sea Sparrow missile.

Although we face severe fiscal constraints in research and development, there are new technologies available that the Navy will shortly be able to integrate into existing platforms.

Advances in technology, such as the electromagnetic rail gun and the laser weapons system, permit the integration of systems and promote the multi-functionality of systems. Instead of a multi-million-dollar missile, a single salvo from a rail gun will cost less than $50,000. These systems represent a great opportunity to fundamentally change the cost curves in our favor.

In addition to harnessing our technological innovation, our Navy is exploring a new concept entitled "distributed lethality," a concept that would disaggregate and better arm the surface fleet. Providing for a better tactical employment of our surface combatants by disaggregating surface combatants from a centralized carrier battle group may represent our best chance of creating a tactical force multiplier.

By complicating potential adversary's ability to successfully target future naval combatants, our Navy becomes more survivable and increases the probability that potential aggressors will decide to pass at future conflict.

I continue to believe the most challenging capability or tactical problem that the Navy has to contend with does not reside within the Department nor is it posed by potential adversaries. I believe that the most pervasive and difficult problem that the United States Navy faces today is the will of this body to provide for our common defense and to not be lulled into a false sense of security.

The idea of American exceptionalism is not idle words, but, rather, a unique American approach to our current challenges and future goals and objectives. We need to embrace the role of the United States and especially the role of the United States Navy and surface fleet, in particular, in maintaining and securing the global commons.

As proponents of seapower, we know that our Nation's viability and future is linked to the strength and health of our fleet. I just question what we are doing today to ensure our next generation is able to enjoy the same benefits of life and liberty that preceding generations have provided to us. I look forward to hearing Mr. Clark and Mr. McGrath's insights on how the Navy can reach distributed lethality amidst fiscal constraints.

[The prepared statement of Mr. Forbes can be found in the Appendix on page 27.]

Mr. FORBES. And, with that, I would like to now turn to the ranking member of this subcommittee, Mr. Courtney, for any comments he may like to offer.

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

Mr. COURTNEY. Thank you, Mr. Chairman.

And thank you to both witnesses for your presence here today. Again, you have been sort of frequent fliers around this building, and much appreciated. Because, you know, there is obviously a lot in the short term with a mark just a few days away, but, also, frankly, the longer view that I think you guys spend a lot of time thinking about and your experience and training, you know, really provides a very helpful guidance to all of us.

I am not going to read my whole statement here, but just sort of reiterate what the chairman mentioned, is that the Cooperative Strategy for 21st Century Seapower, which was released and we had a hearing on a few days ago, again, sort of focused on the fact that our surface forces are critical to making that strategy work. It faces, in many respects, you know, almost unprecedented challenges.

The Under Secretary for Acquisition, Under Secretary Kendall, spoke yesterday at the Sea, Air, and Space Convention with a packed audience and made the comment that he thought that the sort of changing technology and capabilities out there are about as threatening as existed back at the time of World War I with the evolution of a lot of new platforms that people really hadn't even gotten their heads around. So, you know, obviously, we really need to be focused on what you are here to talk about today.

So, again, look forward to your testimony.

And, Mr. Chair, I am just going to ask the rest of my remarks be entered for the record.

Mr. FORBES. Without objection, they will be entered.

[The prepared statement of Mr. Courtney can be found in the Appendix on page 29.]

Mr. COURTNEY. And I will yield back.

Mr. FORBES. Thank you, Mr. Courtney.

And I know you served on a panel at that exposition. I know you represented us all very, very well. And I am sure that you mentioned submarines at least once or twice in that panel. Not today, but thanks so much.

Mr. Clark, it is my understanding you are going to start.

And, as I mentioned to both of you, we will put your full written remarks in the record, but we look forward to any opening comments that either of you may have.

So we will turn the floor over to you.

STATEMENT OF BRYAN CLARK, SENIOR FELLOW, CENTER FOR STRATEGIC AND BUDGETARY ASSESSMENTS

Mr. CLARK. Thank you, sir. Chairman Forbes and Ranking Member Courtney, thank you very much for inviting us to discuss the role of the surface Navy in presence, deterrence, and warfighting today. I am honored to be here and to appear with my friend Bryan McGrath.

This discussion is timely, as the U.S. Navy surface force is at a crossroads. At the beginning of this century, the Navy had planned to introduce a family of new warships, the CG(X) missile defense

cruiser, the DD(X) land attack destroyer, and the sea control-focused littoral combat ship [LCS]. Now we look back and each of those ships is now either truncated or canceled, and we need a new family of surface ships to address the future of security environment.

The environment in which those ships was introduced reflected kind of that post-Cold War security environment where the Navy supported power protection ashore and its dominance at sea was unquestioned.

The new cruiser was designed to protect U.S. forces from missiles launched from land. The destroyer was designed to use stealth to approach close to shore and use its guns to attack targets on land. And the littoral combat ship was planned to be used to address coastal threats, like mines or diesel submarines and small boats.

Today the security environment is much different. In particular, sea control can no longer be assumed and U.S. surface forces are going to have to expect to fight to gain and maintain access for the joint force in the future. Also, resources to address this challenge have and will continue to be constrained.

So recognizing these trends, the Navy decided to end each of these programs that were involved in this new family of surface ships, but it now needs to come up with a set of new solutions that are going to address this future environment.

That future environment is much different. Today sophisticated anti-access/area-denial capabilities continue to improve and proliferate, threatening U.S. freedom of action, and challenging the security assurances it provides to its allies and partners.

At the same time, instability is spreading through the action of revisionist states, such as Russia, China, and Iran, and there is also the failure of governments in the Middle East and Africa, which are increasing demands for U.S. forces to come in and help train and do security assistance with our allies and partners around the world.

Fortunately, the Navy has some opportunities to address this set of challenges both with instability and anti-access capabilities.

In the next year, it is going to finalize specifications for the Flight III *Arleigh Burke* destroyer; it is going to determine the specific requirements for the new frigate that is going to be introduced; it is going to implement a plan to try to sustain its cruiser capacity; it is going to integrate into the fleet a series of new ships, such as the joint high-speed vessel [JHSV], the afloat forward staging base [AFSB], and the mobile landing platform [MLP].

The Navy should take advantage of these opportunities to restore the ability of surface combatants to gain and maintain access for the joint force through sea control and to also sustain the ability of the surface fleet to provide a stabilizing presence and provide security assistance and training to our allies and partners.

I believe this is going to take five major actions on the part of the Navy. First, it is going to have to adopt an offensive mindset. Today a surface fleet is more focused on defeating enemy missiles and torpedoes than attacking the aircraft, submarines, or ships that have launched them. This puts us at the wrong end of the cost exchange and the wrong end of the missile exchange.

The missiles that an adversary would have to launch to overwhelm a DDG's air defense would cost about one-tenth the price of that DDG. So it puts the adversary in a very advantageous position because of the way we are operating. Instead, U.S. surface forces need to focus on killing the archer instead of shooting down his arrows. That is the only way we are going to be able to change the conversation and that exchange ratio.

The number two thing we have to do is change our air defense approach. Our cruisers and destroyers today employ an air defense concept that uses the largest and most expensive interceptive missiles first and only uses cheaper, higher capacity systems, such as small interceptors or electronic warfare, after the long-range interceptors have run out or failed. We need to instead engage incoming missiles closer to the ship with improved smaller interceptors and new electronic warfare capabilities and directed energy systems that will be fielded in the next 5 years.

Third, we need to take the defensive workload off of our large surface combatants. Our cruisers and destroyers should be the offensive workhorses of the surface fleet, but, instead, they are consigned to a bunch of defensive missions that are going to come because we have no other way to provide air defense to forces ashore or forces at sea, as well as escorting convoys and logistic ships in wartime.

One way you could do that is to make sure that the Navy's new frigate will be able to do air defense. Another way we can do that is by looking at ways to shift ballistic missile defense missions, which are an increasing demand signal on the surface Navy, to shore systems that are able to do those missions much more efficiently in certain locations.

Four, we need to expand our capacity for training and security force assistance from sea. Today we only have half the number of small surface combatants that the Navy said are required. Half. What that means is, for all of those missions for minesweeping, for training, for maritime security, like counterpiracy, we are having to use cruisers and destroyers instead of using frigates and other small ships as we have done in the past.

We need to look at ways to be able to expand the ability of other ships, such as those in our logistics fleet or in support ships, to be able to do some of those missions instead of using our large surface combatants to do so. There is ways we could do that by adapting the LCS mission package concept and widening its approach and using it on other ships than just the LCS.

Fifth, we need to adopt new technologies. Lasers, rail gun, new electronic warfare systems, and unmanned systems are all mature, and we have seen examples of them being used in operational environments. The Navy needs to start looking at ways to integrate these into combatant ships to be able to take advantage of what they are going to provide in terms of higher capacity, lower cost, offensive, and defensive capabilities.

These actions would enhance warfighting. They would enhance our ability to provide presence. And the end effect of that is going to be deterrence. And that is what we are looking for from the Navy, because, fundamentally, the Nation depends on naval forces to deter and defeat other forces in conflict.

I look forward to your questions and the discussion that will follow. Thank you.

[The prepared statement of Mr. Clark can be found in the Appendix on page 31.]

Mr. FORBES. Thank you, Mr. Clark.

Mr. McGrath.

STATEMENT OF BRYAN McGRATH, MANAGING DIRECTOR, THE FERRYBRIDGE GROUP

Mr. MCGRATH. Thank you, Chairman Forbes, Ranking Member Courtney, and other members of the subcommittee for the invitation to testify here today on the role of surface forces in presence, deterrence, and warfighting.

Surface forces play distinct roles in all three of these functions with the capability of the ship generally determining how extensible it is throughout the range of functions. Generally speaking, the more capable the ship, the more extensible it is.

That said, a new generation of threats, a decline in surface force proficiency in some vital missions, and a lack of operational imagination raise important questions about the future employment of the surface force in wartime.

China's 20-year program of naval modernization and the development of anti-access and area-denial [A2/AD] regime are in no small measure associated with their realization after the Taiwan Strait Crisis of 1996 that American naval dominance in East Asia had to be contested. During this last 20 years, the U.S. Navy has gotten smaller, even as it has purposely de-emphasized the capabilities that are now required to counter China's A2/AD complex.

After years of neglecting surface-based antisubmarine warfare and antisurface warfare, we are now faced with a rising peer competitor who is forcing us to face this neglect.

We have a surface force that is less capable of destroying enemy surface and submarine forces than its Cold War predecessor. We have a carrier air wing that has privileged short-range strike to the point where its effectiveness and traditional war-at-sea tasks is questionable. That question of the carrier air wing is one I hope we are able to take up on another day.

In the future, sophisticated sea-denial strategies, such as those wielded by the Chinese, will drive the U.S. Navy to look at seizing temporary and limited pockets of sea control in order to enable other follow-on operations, something I like to call offensive sea control, though it bothers the purists.

In an era of little or no threat, the Navy packed its defense around the carrier and it positioned itself close to an adversary in order to generate maximal combat sorties. Against a high-end, near-peer competitor implementing an A2/AD strategy, this is no longer possible. The carrier strike group will have to fight its way into portions of the ocean from which it can then execute strikes and then quickly retire and/or relocate.

In essence, this resembles an island-hopping campaign that you are familiar with from the Second World War, except, whereas in those battles islands were seized and then held to enable follow-on operations, in this paradigm, pieces of the ocean will be seized and

held for some period of time from which offensive operations are then conducted.

Critical to any concept of offensive sea control is a more lethal, mobile, and innovatively employed surface force. We must begin to more holistically evaluate risk, and we must recognize that our current concepts of force employment provide a determined foe with increasingly less complexity.

I look forward to a discussion with you today of creating operational problems for potential adversaries with more innovatively operated surface forces wielding powerful offensive and defensive weapons. Thank you.

[The prepared statement of Mr. McGrath can be found in the Appendix on page 50.]

Mr. FORBES. Thank you, Mr. McGrath.

And let me maybe set a stage. And I am going to ask a number of things—it is not an exam. So don't feel like you have to answer each one. Take whichever one you want to set kind of the foundation of this.

Both of you have talked about today how we have been planning essentially for an uncontested environment, we are no longer going to be in an uncontested environment. If I had General Welch here from the Air Force, he would say the exact same thing, that tomorrow we are not going to be in an uncontested environment.

How did we miss that? I mean, you know, did we go a decade or two decades just missing the fact that one day we would be in a contested environment? It seems like to me that was pretty obvious. How did we miss that on such a big scale?

The second thing is: As we find ourselves moving into this contested environment, are we talking about the need to change platforms or concepts and strategies or perhaps both?

And then, if it is changing concepts, how good are we at changing? I mean, for the longest time we have been talking about Air-Sea Battle concept. That was the big, you know, concept du jour and all of a sudden, shoom, it just got swept out, you know, under the rug.

And then the last thing that I would like for you to kind of put in that framework: We are talking about the high-end A2/AD stuff that we are looking at. But we looked at in the full hearing today—we had Admiral Locklear here, and one of the questions I asked—and I know both of you have looked at the new Office of Naval Intelligence report that just came out. It really talked about the military maritime buildup for China.

And in addition to that, it talked about them putting out more naval ships this year than any other country and more next year. But one of the things that particularly concerned me was it is not just their naval ships, but it is what they are doing in their coast guards. And their coast guard now—with the ships that they have in their coast guard alone, they are within like 68 ships of our entire Navy and they are having huge capacity and capability increases.

And I showed Admiral Locklear a picture, which I imagine you two have seen—I should have showed it to you beforehand—but it is of a coast guard ship that they have and they have on it "Tug Boat 25." I am sure you have seen it. It is painted white. And then

I showed a picture beside that of their amphibious naval ship that is just painted gray. But they are the exact same ship, you know.

And I worry sometimes that, when we measure and hear the Navy talking, they are comparing our Navy against their navy, but we are missing those lower tier aggressive fights.

So putting that in perspective, how did we miss this environmental shift? Are we looking at platforms versus concepts? And then how do we take into account kind of this lower tier aggressive action we are seeing not just from the Chinese, but the Russians, the Iranians? And how does that play into what we are doing here? Either or both of you on that.

Mr. CLARK. Okay. Well, so I will go first. I will tackle some of those.

To start with the last one first—or to start with this overall question of, I guess, how did we end up in a contested environment without realizing that we were going to do so, a lot of that had to do with the fact that we were fighting other conflicts at that time.

So during the post-Cold War period, for about 25 years, from, you know, 1990 until 2015, we have enjoyed a relatively peaceful time, from the Navy's perspective, of not having to deal with a peer competitor.

But for the first 10 years or so of that, there was really no competitor at all and we didn't expect that the capabilities that Russia had developed would then be proliferated to a bunch of new actors. And then, when that happened, we continued to rely on our existing Cold War systems to get us through.

By upgrading them, we figured that they would be able to continue to provide us the capacity to defeat new cruise missiles, new, you know, weapons that China and others were getting that were coming from the Russians, not realizing that, at some point, the number of weapons that would be able to be brought against us would exceed the capacity of ships to be able to defend themselves. And that is really the fundamental metric that is being exceeded here, is that more weapons can be brought to bear against us than our defensive systems can handle.

And when we say a "contested environment," that is what we are really talking about, is that we are going from a time when one or two missiles might get shot at you by a rogue state or a terrorist actor to now having hundreds of weapons being shot at you by a state actor who has been able to buy them from the Russians. So that kind of accretion of capacity over time is how that sneaks up on you. And, before you know it, you realize that you are now on the wrong end of the cost exchange and need to make a dramatic change to alter that.

Part of what China has been doing in their pretty smart strategy of developing naval capability has been to develop the maritime services, the non-navy coast guard and other surveillance services that they use that are not military but, instead, civilian forces that go out and use similar capabilities to go press their case on legal issues, so executing lawfare.

The problem that we have right now is that the U.S. Navy and the U.S. allies in that region don't have a commensurate or proportional capability to deal with what is called sub-conventional aggression. So what the Chinese do is they do aggression, but it is

below the level of conventional conflict, in the hopes that, over time, they are going to be able to gain an advantage in the competition for territories in the South China Sea and East China Sea.

So we don't have a commensurate set of non-warship, noncombatant-type capabilities that are able to be deployed in that region. And our allies don't have the same thing. So we are not able to assist them in the way that we might be able to where we do equip our noncombatants in a way that would let them contribute to that.

I would say, in order to address these two problems, the higher end problem of dealing with a contested environment and the lower end problem of the subconventional conflict, there is going to be some changes to platforms, but it is going to be a lot of changes to concepts that are involved.

Because how we approach air defense in an environment where the adversary can launch more weapons than I have the capacity to handle means I need to come up with a new air defense concept. So I need to start looking at shooting down incoming weapons closer to my own ship than I would like to because I need to be able to use smaller weapons, weapons with shorter range that I can have higher capacity with. And I can get into some more detail on that.

But there is some specifics on there. But the technical limitations of those systems at a high capacity are such that they don't go very far away. So I have got to shift my air defense concept to be closer in to my ship, which is a cultural change for the Navy. We like to shoot things as far away as possible so I can get multiple cracks at them before they arrive.

We also need to change our concept for how we provide security assistance to our partners. So if China is using its coast guard to bully the Philippines or Japan, we need to think about having ships that are able to operate at that lower level.

So we need to have noncombatant ships like JHSVs or Coast Guard ships or noncombatant logistics vessels that are able to go be out there to provide presence that are able to deter China from that kind of activity because U.S. forces are nearby, but without escalating it by having a warship there. Because right now our only option is to put a cruiser or a destroyer in that region, and that is highly escalatory.

And then the additional thing we need to do is look at our payloads. And so we may need to make some fundamental changes with regard to what kinds of weapons we develop and what priorities we put on weapons development. Right now we build a lot of weapons that are designed for a single mission, and they are generally relatively large weapons with big warheads.

In the future, we are going to have to look at our weapons capacity and maximizing it to get more offensive firepower and we need to go to smaller weapons that use smaller warheads and take advantage of their precision to get the same effect as the larger warhead weapons.

And I need to look at shorter range weapons that perhaps can be smaller as well so I can carry more of them on my ships, more of them on my airplanes, to expand the capacity that I am able to

bring to bear against an adversary who has got a high capacity of his own.

Mr. FORBES. Thank you.

Mr. McGrath, do you want to take a bite at that, especially—I know you have written a lot about distributed lethality. How does that play in that concept in both terms of offensively for us but, also, maybe a cost-imposition strategy against some of our opponents?

Mr. MCGRATH. Yes, sir. Let me start with how did we miss it. We were busy. We were busy doing something else. Not everybody missed it. I think the Navy did a pretty good job tracking the desires and the actions of the PRC [People's Republic of China] as it reacted to the event that I discussed earlier, the Taiwan Strait incident of 1996. The problem was that the rest of the military and the Department of Defense was doing very important today work, the Iraq war and the Afghanistan war.

I think that PRC was wise in when it picked its time to modernize. Again, our attention was elsewhere. Most of our attention was elsewhere. I think, though, that that dynamic has changed, and I see very positive signs here on the Hill, at the White House, and at the Pentagon with respect to focusing more appropriately on China as a peer competitor.

You asked about changing platforms and concepts and systems. Everything needs to be on the table. We have arrived at a place where our Navy hasn't fought a war—a real war in decades against another Navy or against land forces that were attempting to destroy it.

The tactics, techniques, procedures, platforms, acquisition paths that we have placed ourselves on are not up to the challenge of a peer competitor that would wish to deny us what we consider our primary competitive advantage, and that is the projection of power from the sea.

So I think everything has to be looked at. You can't look at it all at the same time and fund it all at the same levels, but you can think about these things. And I see a lot of thought going into evolution of the air wing, distributed lethality, the submarine forces. Networked operations is just fascinating, the things that they are talking about. So I think the Navy is really leaning forward in that regard.

As for Air-Sea Battle, I think, to some extent, when you say it was swept under the rug, some of that I think is, I think, a very positive sense of trying to put some toothpaste back in the tube and stop talking about it all the time. Talk about the things that you have made decisions—very important decisions to talk about because those decisions and what you reveal has a potential impact and an effect that you have thought about and that you can measure. So I think the Department has gotten a little smarter about how to talk about it.

You asked about distributed lethality, and that is something the surface force is talking about quite a bit. Distributed lethality or, as I like to describe it, a concept in which the surface forces of the United States Navy are on an individual unit level made more powerful and then, to really optimize that investment, operated differently, not just in the sort of defense of the carrier battle group—

although we still have to do that—defense of the amphibious ready group—although that must still be done—but to create mischief, to spread the adversary's ISR [intelligence, surveillance, and reconnaissance] forces, to make them assign weapons to a lot more targets so that then any one target has a smaller number of weapons assigned to it. You are diluting—you are thinning his quiver before he ever shoots. These are reasonable operational ends that the surface force can pursue.

A more distributed surface force in wartime is, I think, a laudable goal. The way the surface force operates in the presence and deterrence phases of operations is where we most likely are to sort of rub up against these nontraditional forces that you have described from the PRC.

Quite simply, there aren't enough of our forces to be there and to be watchful and to provide a jaundiced eye at the operations that are ongoing. Oftentimes these operations come to our attention because the nation who believes its rights are being violated videotapes the event or, even worse, China videotapes the event because what it is doing was plan in order to have a desired effect that it could then exploit later.

I think we have to get more sophisticated about how we work with our allies in the region to respond to these events, preplanned responses in which escalation is controlled, in which the story that would be written is thought about in advance, in which those nations use the legal justification—or the legal system to their best advantage.

I have no problem with the Philippines, for instance, taking China to court. I think we should be encouraging nations in the region to use the U.N. [United Nations] and the Law of the Sea Convention to the max extent that they possibly can. I am not sure distributed lethality has a real impact on that problem in presence and deterrence.

Mr. FORBES. Thank you.

Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman.

And, again, thank you to both witnesses.

Mr. Clark, again, you started off with taking us back to the beginning of the century and the shipbuilding plans and, you know, the best laid plans obviously have changed.

You know, one of the sort of fallout that we are still wrestling with as a subcommittee is the cruiser change that you mentioned and, obviously, trying to figure out a cruiser modernization plan that works both in terms of, you know, the length of time that these cruisers can be available and, obviously, you know, fitting it into the rest of the shipbuilding plan.

I was just wondering if you had any comments in terms of the back-and-forth over the last year or two about, you know, what the Navy's proposed, Congress' response, and any possible changes even from here.

Mr. CLARK. Right. Thank you.

So the Navy had proposed originally to decommission about half of its cruisers in a money-saving effort mostly. And then Congress came back and required the Navy to come up with a better plan and there was some money set aside to be able to support that.

And the Navy came up with what I think was probably the best argument and the best plan going forward, which was to take those 11 cruisers, which are half the cruiser force, put them into a layup of sorts and then modernize them over time and then bring them back into the fleet some number of years later so that they would be able to extend their lives and that they would be available out into the 2030s—into the late 2030s or early 2040s.

What that would do is a couple of things. So it would save the Navy some money in the near term because those ships would be largely de-manned and then the cost to operate them would not be borne by the Navy until they get brought back into the fleet. So there would be some near-term savings.

And then down the road, the Navy would be able to have them back in the fleet at a time when it is having to buy the new SSBN [ballistic missile submarine], which is going to decimate the shipbuilding plan. It is going to be—40 percent, maybe more, of the amount of money that would normally be allocated to shipbuilding might be going to the SSBN and the carrier that would be built around the same time. So there wouldn't be much money for anything else. Cruisers would be available to help augment the capacity of the surface fleet.

I think that was a very effective plan in terms of sustaining force structure, dealing with the fiscal constraints the Navy is under right now. The challenge with that, though, is that the Navy doesn't have a good track record of taking ships out of the fleet to put into some layup or inactive period and bringing them back. They tend to go to that inactive state and then make their way eventually to decommissioning instead of going back into the fleet at some later date.

So I think, if the Navy could be held to account to ensure that those ships get brought back into fleet and showed that willingness by having money set aside to support the phased modernization that would occur, I believe that would be the best approach.

Now, I think a compromise, the 2/4/6 plan, is a worthwhile alternative because it still helps extend the lives of the cruisers out into the 2030s so they are able to address the crunch in shipbuilding funds that will occur in the future.

It does save some money in the near term so that there are some benefits on both sides to that, and I think it is a worthwhile compromise. It would be good to see the Navy put some money against it so that it would be clear that that plan was funded, though, so they would be able to pursue it.

Because, otherwise, your only alternatives end up being keep them in the fleet, but have them at some level of operational capability that is not clear because they are not being modernized and they are probably not able to operate as effectively as the other cruisers, or decommission them entirely, which is not an alternative that is being presented. So I think the 2/4/6 plan would be good.

Mr. COURTNEY. Mr. McGrath.

Mr. MCGRATH. Mr. Courtney, my sense is that, with respect to surface force structure, good ideas are in short supply. We are dealing mostly with the least bad ideas. And taking all the cruisers at one time and bringing them back slowly over a course of time I

thought was a reasonable response from the Navy to a financial situation that they are having a tough time dealing with.

2/4/6 is, I think, a reasonable compromise between congressional interests and the Navy's interests. I do think, as Bryan said, if the Navy had some money after 2019 in the budget to fund it, this would probably not be a conversation.

There is very little money to be had, given the number of things the Navy is trying to do, trying to build new ships and new submarines, trying to fund its deployed operations, trying to ensure that we don't so starve non-deployed ships of maintenance and modernization money that it becomes inordinately expensive to bring them out when it is their time to go.

All of these things factor into the decisions they make. And, quite frankly, when I see Congress insert money back into the budget to keep cruisers in, if you were to do the same thing in 2019, 2020, 2021, and 2022, that would satisfy me quite a bit because I would like to see this program go forward.

Mr. COURTNEY. Thank you.

Mr. FORBES. And just a clarification. To do the modernization, you have to have the money in. Is that fair, for both of you?

Mr. CLARK. Yes.

Mr. FORBES. And at this particular point in time the Navy has not put any money in their FYDP [Future Years Defense Program] to do the modernization, have they?

Mr. CLARK. Only the ships that are being done this year.

Mr. FORBES. Right.

But they haven't done anything in their 5-year plan?

Mr. MCGRATH. Right. I don't think there is anything after the 2015 and 2016 ship.

Mr. FORBES. Mr. Russell, our newest member of the subcommittee, we now recognize him for 5 minutes.

And, once again, we are delighted to have you as part of the subcommittee.

Mr. RUSSELL. Thank you, Mr. Chairman.

And thank you, each, for the very insightful overviews. A lot of challenges there.

In the 1980s, you had kind of a whole restructuring of moving to the future of our defense posture and you did see a lot of ships that, to meet the need, were brought out of mothball. And some had been in and out of mothball for several iterations and performed magnificently.

And, you know, Mr. Clark, with regard to the small surface vessels and what would be needed to perform some of those roles, is that an option that the Navy could turn to to make up some of that capacity in the short term?

Mr. CLARK. That might be. So one challenge we will run into is it is expensive to take a ship out of mothballs and bring it back to a condition where it can operate on a, you know, frequent basis overseas.

So that would be something to think about, is that these ships are intended to be relatively inexpensive ships that do these missions at the lower end of capability. So if we have to spend a lot of money to bring a low-end-capability ship into the fleet, maybe that is not worth it.

The first approach might be to go after some of the noncombatant ships that we already have in what is the national fleet. So if you look in what the government owns in terms of ships, you have got the Navy and its combatant ships, which are warships that do their stuff.

There is also logistics ships that the Navy has that could be used, in some cases, to go off and do some security cooperation activities, and they do already. They do exercises in some cases. And you could put mission packages on them that would let them do different things than they do today.

You could also tap into joint high-speed vessels, which are another form of logistics ship. You could go into some of our support ships, which include various salvage ships and repair vessels, and those things can be used for security cooperation and sometimes are.

Then we can also go into some of the supply ships that are part of the Ready Reserve Force, which are reserve ships that we maintain in operational status that are designed to be brought out within 5 or 30 or 60 days, that could be made operational and taken out, and they can use them for some of these security cooperation activities. And they are designed to be brought out, and it is relatively inexpensive to do so.

So I may go after those first before we then go into the mothball fleet and pull some ships out. But it is definitely an option, and it may be less expensive than we anticipate.

Mr. RUSSELL. It seems like a lot of the critical threats that we hear throughout is with regard to advance missile technologies.

You spoke of the cost-ratio benefit to potential opponents and how they deal with this. And I know everything from nuclear defense capacity with the AN/TPY–2 radars, to the Aegis, to the THAAD [Terminal High Altitude Area Defense], a number of other things.

We also have a lot of allies and partners. Our English-speaking allies, in particular, we don't even have to learn languages to operate with them, and they have great shipbuilding capacity.

Does that factor into any of the comprehensive strategy in presence, even, as we look to deal with some of that? And how do we get them up on systems that we find were already in short supply?

Mr. CLARK. So I will let Bryan answer, too.

But we do. So many of our allies and partners operate Aegis systems and similar systems, and they do deploy with us. So pretty regularly a NATO [North Atlantic Treaty Organization] destroyer or frigate will go with a carrier strike group on its deployment and act as part of its escort ship umbrella, if you will. So we regularly do deployments where we take advantage of what allies and partners bring to bear.

Mr. MCGRATH. Mr. Forbes mentioned the surface Navy's distributed lethality concept, and I think part in parcel to that is the fact that we have allies that do have serious capability. The South Koreans have wonderful surface combatants. The Australians. The Japanese. The Indians aren't necessarily treaty allies, but they are friends and we operate with the Indians quite a bit. So there is a great hunger within the sort of world surface force.

Admiral Mullen used to talk about the "thousand-ship Navy." Distributed lethality is the thousand-ship Navy with teeth. And I think that the ability that we have to integrate high-end ships of other fleets into our operations, it is almost built in. They have Link 16, you know, that we are using the same kinds of systems.

On the low end, this is something the U.S. Navy has traditionally not done all that well, is small ships. And I was a captain of a ship. We all come up through the system. And we all would love to scorch around on really fast ships as lieutenants and be in command of those things, but they are expensive to maintain, a lot of them, far from home. And we wind up looking—especially in times of fiscal contraction, those are nice to have. And we concentrate on the high-end warfighting more so than that low end.

I think, when we find ourselves in a position to more appropriately fund naval power, we ought to put some money into the low end. We ought to look at some kind of a fast patrol vessel, heavily armed, four to eight 200-mile surface-to-surface missiles, that we could build for ourselves and build for export, that we could potentially operate in joint bases or composite bases as a way of doing what I like to call maritime boots on the ground, economically showing the flag.

We all have to recognize that these are ships of limited capability, but they show the flag and they are reminders of what is over the horizon.

Mr. RUSSELL. Not far from a lend-lease type of approach from many years ago.

Thank you, Mr. Chairman. I yield back.

Mr. FORBES. Thank you.

The gentleman from Rhode Island, Mr. Langevin, is recognized for 5 minutes.

Mr. LANGEVIN. Thank you, Mr. Chairman.

I want to thank our witnesses for your testimony today.

If I could, I would like to talk first about cutting-edge electric weapons capabilities that are starting to deploy operationally, specifically the LaWS [Laser Weapon System] system deployed onto the USS *Ponce* right now in the Arabian Gulf, and rail gun and advanced EW [electronic warfare] capabilities. These systems are, as you know, starting to become more and more mature and starting to make their way out to the fleet.

And what I want to know is—obviously, the Navy is clearly planning further development. But could you provide your assessments of the Navy's plans and whether you feel these technologies could be responsibly accelerated.

Mr. CLARK. So that is a terrific point. The Navy right now is slowly integrating these new technologies into the fleet. And what you are seeing right now is an emphasis on some demonstration projects like the *Ponce,* where we take an existing system that has been developed in the technology world and bringing it on and just bolting it down to the ship and seeing how it works.

When you get to larger systems, they are going to require a little bit more of a footprint, more interaction with the ship's combat system and electrical power and cooling systems, and that is where you have to do some engineering to figure out where it is going to go, how to fit it in, how to hook it up.

The Navy has not yet got a good plan for how it is going to integrate higher energy lasers, so the kinds of lasers that you would need to be able to do missile defense, not the smaller one that is on the *Ponce,* but something more in the 300-kilowatt range.

Those lasers are quickly maturing. I have seen in the last couple weeks lasers that get up at about half that power and, putting a few of those together, you essentially get to about the 300-kilowatt range. So in the next few years, they are going to be available. The Navy needs to be thinking about how they are going to put that into the next class of—or the next iteration of surface warships that it is developing.

Similarly, with rail gun, the Navy has got a demonstration project that it is going to do next year using *Stockton* with a rail gun onboard, which is terrific. It is a great way to show the applicability of that kind of weapon to a ship.

But, again, there is not a thought or plan yet to integrate them into another class of warship, except perhaps a DG–1000 down the road, which might be a good thing. But, again, that is one ship. And it is a three-ship class; so, it is not likely to be able to translate into an additional number of hulls.

The Navy needs to think about: Well, how would I take a rail gun and put it onto a number of ships that would make it able to make a difference in warfighting? So——

Mr. LANGEVIN. Yeah. Exactly what you are saying is what concerns me, is that the technologies are maturing faster than what we may realize. And my fear is that these things are going to be ready and we are not ready to deploy them and the capabilities in theater.

Mr. CLARK. Exactly.

Mr. LANGEVIN. Well, I appreciate the answer.

Mr. McGrath, as you allude to in your testimony, there is a sea change occurring in the capabilities of undersea systems, including in how they might support surface action.

While submarines will clearly continue to be the nexus of such capabilities, how might advanced undersea systems and sensors play into the concept of disaggregated surface forces that you discuss?

Mr. MCGRATH. Sir, in a big way, especially when the shooting starts. The ability of long-range unmanned undersea vehicles to deploy electronic warfare sensors, to employ weaponized UAVs [unmanned aerial vehicles] that could then remove some of the threat that we discussed earlier to surface operations—there are so many—and I am sure you have had some of these briefs.

What we can bring—the combat power of them, what we can bring from under the surface of the ocean, because it is there, it is hiding, and the reaction time to it in many cases is negligible for an adversary, huge capability.

And I appreciate you bringing up the question because what it does is it highlights the degree to which the Navy fights as a system. We don't fight as an aircraft carrier. We fight as a strike group. We fight as an Expeditionary Strike Force. We fight as a joint force. And so all of these weapons systems work together in, I think, a very robust architecture to support each other.

So I think there is a huge role for subsurface-launched sensors and weapons in helping to enable disaggregated surface operations. One very important way is to be able to put up long-range ISR assets, maybe some kind of a UAV that takes off, flies around for 8 or 10 hours, supports a SAG [surface action group] that is disaggregated, and then it flies to a land base and lands for recovery. That would be a useful capability. But I think the sky is the limit on how we can use the undersea force.

Mr. LANGEVIN. Very good. Thank you, both.

And I yield back, Mr. Chairman.

Mr. FORBES. I thank the gentleman for his questions. You have been a leader on these technology issues. And, hopefully, this subcommittee can play a major role in helping the Navy to make sure we are moving faster at seeing how we can deploy them. So thanks for your questions.

Mr. LANGEVIN. Thank you.

And, Mr. Chairman, I should mention that, although I—you know, obviously, it is appropriate to raise this issue with respect to the Navy in this subcommittee—the Navy has been a leader in trying to push these technologies that have been in the lab and get them actually into the field. The other services could take a lead from——

Mr. FORBES. We just get greedy and we want to get them there even faster.

Mr. LANGEVIN. Exactly.

Mr. FORBES. So that is good, Jim.

Now, I would like to recognize the distinguished gentleman from Texas, the chairman of the Agriculture Committee, Mr. Conaway, for 5 minutes.

Mr. CONAWAY. Well, thank you, Mr. Chairman.

I represent a district that is totally landlocked. I don't have any ports. I don't have any shipbuilding. I don't have anything like that. So——

And, Mr. McGrath, probably the sea is the limit rather than the sky is the limit on that last phrase that you used earlier.

Mr. MCGRATH. I stand corrected.

Mr. CONAWAY. Mr. Clark, on your five-point program, you made a reference to a kill-the-archer issue versus, I think, what we are doing right now. Put some meat on the bone on that for me, given that the archer's range is generally longer than the reach of a lot of our stuff that we are bringing to the fight. Help me understand what you are talking about.

Mr. CLARK. You bet.

So the archers, in this case, are going to be aircraft, submarines, and surface ships that are able to launch antiship cruise missiles at our surface ships.

Today the surface ships we deploy don't have weapons that are able to reach enemy aircraft, ships, or submarines until we are already well within range of their antiship cruise missiles. So, as Congressman Forbes has said, we are outsticked. The way you get out of that is we have to deploy some new weapons, and that is why I have got the emphasis on weapons there.

So for the aircraft threat, the new SM–6 missile that is coming out that has been deployed on a few ships already and is being in-

corporated with the new Aegis baseline, that missile is going to be able to reach an airplane outside the range of the airplane's antiship cruise missiles in most cases—or in many cases. So that gives us that ability to hit the archer before he is in range to shoot his arrows. That is a good news story on the air side.

We don't have a similar capability on the ship side. So if I want to shoot another ship and I am a surface ship, I have to wait until I am within Harpoon range if I have Harpoons even onboard, which means I am probably half of the distance that he can reach me. So he can—I am well within his weapons envelope when I do that.

For submarines, it is even worse because my antisubmarine rocket that I have got onboard of a surface ship has a range of about 12 miles, whereas the antiship cruise missiles that Chinese submarines, for example, can carry have ranges of a couple hundred miles and they can be launched comfortably from 100 to 150 miles, so I am well within his weapons range when I am able to shoot him.

Now, we might have a helicopter or something flying around that might be able to attack him, but that is only if the helicopter is in the right place at the right time and is able to do something about it. So we need new weapons that allow me to increase the range.

So on the ship side, the Navy is developing the long-range antiship missile, the LRASM, that will eventually be going onto surface ships. I would advocate that. In addition to being able to do ship attack, that missile will also be able to do strike missions, because every VLS [vertical launching system] cell that I take for a strike mission is a missile cell I can't use for anything else. So we need more multi-mission weapons.

And then, for the submarine threat, we need to develop an antiship rocket that has got longer range. So if I do detect a contact, a submarine out, you know, dozens of miles away, more, I can engage him right away and make him go away before he is able to mount an attack against me.

Mr. CONAWAY. Dozens of miles is significantly shorter than 200 miles you mentioned earlier.

Mr. CLARK. Right. Right.

So it is—you could—we could maybe develop an antisubmarine rocket that goes out, you know, 100, 150 miles that would be able——

Mr. CONAWAY. So it is on—it is on the weapons package, isn't it, not necessarily the——

Mr. CLARK. Right.

Mr. CONAWAY [continuing]. The transport of those weapons?

Mr. CLARK. Right. My detection capability may or may not extend out that far under water.

Mr. CONAWAY. Yeah.

Mr. CLARK. But you certainly want the ability to reach out that far if you were able to get detection.

Mr. CONAWAY. I got you.

And then your fourth point about expanded capacity for train and equipment. I must have dozed off. Can you back up and go through that one again. Are you just talking about using different

ships to do the train and equip mission that we are currently using?

Mr. CLARK. Right. So, normally, when we want to do security cooperation——

Mr. CONAWAY. And stop laughing in the back. You saw me dozing off. So stop it back there.

Mr. CLARK. Normally, the kind of security cooperation or training missions that we do with partner nations, especially some of the less-capable partners, we use small surface combatants to do that.

We have used frigates in a lot of cases to do that over the last 20 or 30 years. Well, we don't have any frigates now. They are all being decommissioned, and we are only going to have half the——

Mr. CONAWAY. Unless you rename the LCS.

Mr. CLARK. Right. Right.

And so we have got a few LCS out there, but not very many, and they would ostensibly pick that load up. But we only have half the number of small surface combatants that are required right now, and it is going to be below the requirement until well into the 2020s.

Mr. CONAWAY. So that is more just a tactics issue? I mean——

Mr. CLARK. So I am arguing that we take some of the noncombatant ships——

Mr. CONAWAY. Right.

Mr. CLARK [continuing]. In the fleet and just take some of those mission packages from the LCS and, instead, put those onto the noncombatant ships and get the joint high-speed vessel and the mobile landing platform and some logistic ships to go out and do these missions instead. So the missions get done, but we are not having to do it with a cruiser.

Mr. CONAWAY. All right. Well, thank you all for your comments. Thank you.

Mr. FORBES. Mr. McGrath, could you follow up on Mr. Conaway's question a little bit, too. Because we have really three concepts. We can block the arrow. You know, we can try to blind the archer. We can try to kill the archer.

I think one of the things both of you have talked about is that right now we have an overcapacity of trying to block the arrow, but technology is getting to the point where it is going to be more and more difficult to do that; so, we are going to have to try to kill the archer.

And so can you kind of explain the tradeoffs we have in those two concepts.

Mr. MCGRATH. Bryan came up in the Navy as a submariner. I came up as a surface guy, Aegis for most of my time. And so, when Bryan talks about his concept for air defense and he talks about waiting longer to take the shot, I start to get a little nervous, because that is—that is the human reaction that you have in a ship, is that you want to kill that missile as far away from you and from what you are protecting as possible.

Range equals dollars. It is a very simple—very simple thing. Probability of kill increases as range decreases. Right? All of these things are interrelated, but the nervousness of a surface warfare officer remains. If I have to sit there and wait, it is a hard thing to do.

And so, when Bryan and I have our arguments about this concept, I talk to him about we have to—there is a culture to overcome, there are training issues we would have to overcome, and we would have to layer into this—so that is—what he is describing is the blocking—right?—killing the—killing that—killing that inbound missile closer to you at a more economical rate. That is fine.

The other—one of the other things that you could do is you can mess with its guidance. You can—you can make it track something that is not you—deceit, deception. The surface force in N2/N6 at the Pentagon are putting a lot of money into the SEWIP [Surface Electronic Warfare Improvement Program] Block III electronic warfare system that we will put to sea on ships.

The more we can defeat kinetic attacks with nonkinetic means, the deeper our magazines will get. The more we are able to—the more we are able to integrate the weapons systems that Mr. Langevin was talking about that are pennies or dollars a shot, the deeper our magazines will get.

We have to maintain, though, the ability to reach out at range. Some percentage of those magazines has to be filled with weapons that can take advantage of the sensor volume that we have.

That has been one of our problems for a long time in surface warfare, is we go out there and we bang away with a SPY–1 radar—or soon a SPY–6 radar—on the AMDR [Air and Missile Defense Radar] that has got, I mean, hundreds of miles of range, but we could only take advantage of a small part of that search volume. The SM–6 helps us overcome that.

So taking the archer out before he shoots his arrow is, once again, important, like it was in the Cold War. In the Cold War, we set F–14s out hundreds of miles from the aircraft carrier and we had tactics that we developed. We had tanking that would support it. The outer air battle was something we took a lot of pride in being able to fight in. When that threat dissipated, we de-emphasized the outer air battle. We are gaining some of that back.

I think, on a totally unrelated—not a totally unrelated—the F–35 will need a longer range AAW [anti-aircraft warfare] weapon, something like we used to—like the Phoenix that we grew up with on the F–14. We need a long-range air-to-air weapon so that the F–35 operating in this naval integrated fire control-counter air environment, NIFC–CA [Naval Integrated Fire Control-Counter Air Capability], can get that archer even further away, maybe when he goes feet wet. Maybe you don't have to wait until he gets near his weapons release point.

So the technology is there that we can exploit, but we need the weapons that exploit the search volume that we are able to generate.

Mr. FORBES. I want to thank you both for taking the time to be here with us today. And, as I mentioned to both of you before we started, I want to give you now whatever wrap-up time each of you need for anything you need to clarify, maybe elaborate or that we didn't ask that you think is important to give as part of this transcript.

And, Mr. Clark, we will start with you.

Mr. CLARK. Thank you, sir.

So one thing I will note is the new technologies we talked about that could be used for air defense, so rail gun, lasers. High-powered microwave would be another example and then electronic warfare. All of those technologies could do a lot to give us more defensive capacity and open up those vertical launch system cells for offensive weapons instead.

The one thing that you have to do in order to leverage them, though, is you have to be able to accept that missiles are going to get closer to you before you engage them, because all of those systems are line-of-sight systems that can only, you know, engage a missile if it is on the horizon 10 miles away and, if it is a little bit higher up, maybe 20 miles away. So you are not going to be able to engage incoming missiles with a nonkinetic weapon like that at more than 20 or 30 miles, generally. So that is part of the air defense concept you have to accept.

But then, you know, stepping back to look at the big picture, the Navy is faced with a lot of hard choices in the next, you know, couple of years as it starts to figure out how to equip the surface force. And the surface force doesn't have the clear and unambiguous mission of the undersea forces that, you know, do things for surveillance and strike and for strategic deterrence, and it doesn't necessarily have the clear missions of the carrier air wing.

But it is kind of the jack-of-all-trades. It does a lot of different things, and we depend on it for a lot of different missions, from security cooperation all the way through high-end missile defense and strike.

And, as a result, it is hard for it to be able to maintain that ability to work in every domain, from undersea to air and space, as well as being able to do every mission across the range of military operations.

So the Navy has got to put the investment necessary to maintain the force structure capacity so it can maintain the presence. It has got to maintain the warfighting capability in the fleet that it needs in order to be effective and then deter conflict. And then it has got to be willing to sustain that over time, even in an environment where other things are going to intrude upon it.

So I would advocate that the Navy needs to look carefully at these upcoming decisions and, you know, adapt the surface fleet to be able to evolve into the fleet that is able to go back on offense and develop this offensive mindset and equip it with the kinds of weapons and the kinds of sensors it needs to be able to be effective.

And, you know, I think one thing—one thing I fear is that we will just progress down the status quo, we will simply recapitalize our existing systems, as opposed to adopting new concepts that might enable us to maintain the warfighting capability we need going into the future.

Mr. FORBES. Thank you.

Mr. McGrath, give you the last word.

Mr. MCGRATH. Thank you for this opportunity.

My friend Ron O'Rourke at the Congressional Research Service likes to talk about——

Mr. FORBES. He is watching what you say; so, make sure that you don't say anything critical.

Mr. MCGRATH. He talks about being in a new strategic era, and I think he is right. My way of putting that is: Great power dynamics back on the menu.

We have to begin to think differently about how conflict in this new strategic era is waged. We cannot continue to address this question with the same risk profile that we applied to campaigns and campaign analysis when we were the sole hyperpower, when there was no blue-water threat to the U.S. Navy.

Those aspects of that threat environment drove us to well-intentioned decisions. We have removed surface-to-surface missiles from our DDG *Arleigh Burke* destroyers. We built *Arleigh Burke* destroyers, from number 51 to number 78, with a Harpoon missile on it. Number 79 through today cannot kill another ship over the horizon by itself. We have not built a ship in the United States Navy since 1999 that can kill another ship over the horizon by itself.

That decision and decisions about how to allocate missions within the portfolio—surface, subsurface and aviation—has led to a situation in which we look at the surface force, the Navy looks at the surface force, as something that needs to be protected by the air wing. I think that needs to be questioned.

I think we have put a ton of money in the last 30 years into the world's most sophisticated air defense systems. I think that we have to begin to question whether or not air supremacy or air superiority that is required for surface operations—detached surface operations—whether that can't be provided to a level of risk that is acceptable by the ships themselves.

I am not saying that we should drive three-ship SAGs into the Taiwan Strait. I am saying that the Chinese ISR complex is not equally as good throughout its entire volume and that there are places within it where surface forces will be able to operate, will be able to create mayhem, and will be able to hold targets that that opponent would value at risk. We just have to think differently about that risk.

Thank you.

Mr. FORBES. Thank you, both. We appreciate your time, and thank you for sharing it with us today.

And, with that, Mr. Courtney if there is nothing else that you have, then, we are adjourned.

Mr. COURTNEY. Thank you, both.

Mr. FORBES. Yeah.

[Whereupon, at 3:08 p.m., the subcommittee was adjourned.]

A P P E N D I X

April 15, 2015

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

April 15, 2015

Opening Remarks of the Honorable J. Randy Forbes
for the
Seapower and Projection Forces Hearing on
The Role of Surface Forces in Presence, Deterrence, and Warfighting
April 15, 2015

Today the subcommittee meets to discuss the role of surface forces in presence, deterrence, and warfighting. I am particularly pleased to have two distinguished Seapower expert witnesses to testify before our subcommittee:

- Mr. Bryan Clark, Senior Fellow at the Center for Strategic and Budgetary Assessments; and
- Mr. Bryan McGrath, Managing Director at The FerryBridge Group.

Thank you all for being here and testifying today.

This committee's last hearing discussed the evolving maritime security report in the Navy's recently released report, "A Cooperative Strategy for 21st Century Seapower." Today, we examine surface forces in this new environment and how we accomplish the transition from a defensive to an offensive surface force capable of operating and achieving objectives both independently and in cooperation with other forces.

Looking at our naval surface forces today, we see a multitude of new capabilities are being integrated into the fleet. We are incorporating better sensors including an expanded air and missile defense radar that is 30 times better than current technologies and a new digital electronic warfare capability to better detect, decoy and defeat incoming missiles. We are continuing to expand our anti-submarine warfare capabilities including the addition of multi-function towed array and a variable depth sonar on our small surface combatants that will be able to better track even the quietest of submarines. We are fielding new missiles to better pace the threats we face, including a long range anti-ship missile and better short range missile capabilities resident in the enhanced sea sparrow missile.

Although we face severe fiscal constraints in research and development, there are new technologies available that the Navy will shortly be able to integrate into existing platforms. Advancements in technology, such as the Electromagnetic Railgun and the Laser Weapon System, permit the integration of systems and promote the multi-functionality of systems. Instead of a multimillion missile, a single salvo from a rail gun will cost less than $50 thousand. These systems represent a great opportunity to fundamentally changing the cost curves in our favor.

In additional to harnessing our technological innovation, our Navy is exploring a new concept entitled distributed lethality—a concept that would disaggregate and better arm the surface fleet. Providing for a better tactical employment of our surface combatants by disaggregating surface combatants from a centralized carrier battle group may represent our best chance of creating a tactical force multiplier. By complicating potential adversaries' ability to successfully target future naval combatants, our Navy becomes more survivable and increases the probability that potential aggressors will decide to pass at future conflict.

I continue to believe the most challenging capability or tactical problem that the Navy has to contend with does not reside within the Department or is it posed by potential adversaries. I believe that the most pervasive and difficult problem that the United States Navy faces today is the will of this body to provide for our common defense and to not to be lulled into a false sense

of security. The idea of "American exceptionalism" are not idle words but rather a unique American approach to our current challenges and future goals and objectives. We need to embrace the role of the United States, and especially the role of the U.S. Navy and surface fleet in particular, in maintaining and securing the global commons.

As proponents of seapower, we know that our nation's viability and future is linked to the strength and healthy of our fleet. I just question what we are doing today to ensure our next generation is able to enjoy the same benefits of life and liberty that preceding generations have provided to us.

I look forward to hearing Mr. Clark and Mr. McGrath's insights and how the Navy can reach distributed lethality amidst fiscal constraints.

With that, I turn to the ranking member of the subcommittee, Mr. Courtney.

Opening Remarks for Congressman Joe Courtney
Ranking Member
Seapower and Projection Forces Subcommittee
Role of Surface Forces in Presence, Deterrence, and Warfighting
April 15, 2015

Thank you, Mr. Chairman. We are here today to get the perspectives of two well-informed witnesses on the role of our surface forces in presence, deterrence and warfighting today and into the future.

As the recently released Cooperative Strategy for 21st Century Seapower makes clear, our Navy is engaged in a wide variety of missions critical for the security of our nation. In order to achieve this strategy, we need a robust mix of ships and capabilities to ensure that we retain the ability to project power, maintain presence, deter aggression and, if needed, fight and win conflicts. Our surface forces are, and will continue to be, absolutely critical to these areas.

Our surface forces are as stressed as they have ever been, and we continue to demand more of them. They have had to be ready for war, whether it has been conducting tomahawk strike missions into Libya or against ISIL insurgents, or conducting ballistic missile defense in the Mediterranean or off the coast of North Korea. They have had to protect our sea lines of communication against piracy and drug trafficking. And they have had to represent American might on the high seas, training to defeat threats in the realms of surface, subsurface, air, cyber, and electronic warfare.

Looking ahead, our surface forces, like the rest of our military, are facing a wide range of challenges. Other security actors are increasing technological capability in every realm, but especially in their surface fleet's ability to wage and win war in the maritime domain. Territorial disputes in the South China Sea and East China Sea run the risk of inflaming tensions and disrupting maritime commerce in some of the busiest waterways in the world. Russia's aggressive behavior has manifested itself at sea as well as on land all the way to the Arctic.

But for all their ability to wage war, our surface forces also represent an olive branch to those who are willing to take it. The surface navy's contributions to humanitarian missions in the last ten years have literally saved thousands of lives, from Haiti to Indonesia to the Philippines. And the sight of an aircraft carrier, destroyer, or amphibious warship arriving in a foreign port—with sailors manning the rails in dress blues or summer whites— signals our commitment to ensuring peaceful relations with our allies and partners.

Given these complex set of challenges, it is imperative that we give serious thought to the future of our nation's surface navy and the diverse problem set it faces. Intellectual rigor must be applies to our assumptions, our technologies, and our strategies. How we move out on initiatives such as the cruiser modernization, the development of future small surface combatants, the impact of cyber warfare and electronic warfare on our communications systems, our ability to fight and win in an anti-access area denial (A2/AD) environment, our ability to detect enemy

submarines, and the creation of new weapons systems such as rail guns and laser weapons, will all determine our success in facing the challenges of the future.

To this end, I welcome the discussion from Bryan Clark and Bryan McGrath. Both have recently offered their insight on how the surface Navy can expand its offensive capabilities, extend its reach, and stay on the leading edge of maritime control. I look forward to hearing more about their thoughts on the future of our surface forces and areas where the Navy, as well as this panel, can work to augment capabilities today and in the future.

Mr. Chairman, thank you again and I look forward to our discussion today.

April 15, 2015

STATEMENT BEFORE THE HOUSE ARMED SERVICES SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES ON THE ROLE OF SURFACE FORCES IN PRESENCE, DETERRENCE, AND WARFIGHTING

By Bryan Clark
Senior Fellow
Center for Strategic and Budgetary Assessments

Chairman Forbes and Ranking Member Courtney, thank you for inviting me to appear before you today to present my thoughts on the role of U.S. Navy surface forces in presence, deterrence, and warfighting.

This discussion is timely, as today's U.S. Navy surface fleet is at a crossroads. At the beginning of this century, the Navy planned a new approach to surface warfare supported by a family of new ships: the CG(X) missile defense cruiser, DD(X) land attack destroyer, and sea control-focused Littoral Combat Ship (LCS).[1]

This new family of ships was intended to enable "network-centric warfare," wherein each ship would specialize in a small set of missions and aggregate their capabilities through a dense communications network. This would enable each ship to devote more effort to a smaller set of capabilities to address improving threats, while retaining the ability of the larger fleet to conduct the full range of surface operations. Networking, it was argued, would enable numerous, widely-dispersed LCSs to provide day-to-day presence for security cooperation and training missions while being able to integrate with less numerous, regionally-focused CG(X)s and DD(X)s for deterrence and warfighting operations. Each of those ships, however, is now cancelled or in transition, and the concept of

[1] Sea control is defined by the Navy as, "The employment of naval forces, supported by land and air forces as appropriate, in order to achieve military objectives in vital sea areas. Such operations include destruction of enemy naval forces, suppression of enemy sea commerce, protection of vital sea lanes, and establishment of local military superiority in areas of naval operations." See U.S. Navy, *Naval Operations Concept 2010* (Washington, DC: U.S. Navy, 2010), available at http://www.navy.mil/ maritime/noc/NOC2010.pdf.

network centric warfare has been undermined by improving communications jamming and counter-targeting capabilities among our potential adversaries.

The Navy needs a new approach to surface warfare informed by the demands of a security environment that is not as benign or stable as it was in 2001. Fifteen years ago, a decade after the fall of the Soviet Union, the Navy was without a significant competitor. U.S. surface combatants could take sea control for granted and specialize in new missions such as ballistic missile defense (BMD), counter-piracy, or strike. Today the Navy's ability to achieve sea control is increasingly contested. Sophisticated anti-access/area-denial (A2/AD)[2] capabilities continue to improve and proliferate from near-peer competitors to other U.S. rivals, threatening U.S. freedom of action and challenging its security assurances to allies and partners. At the same time, instability is spreading through the actions of revisionist states such as Russia, China, and Iran, as well as the failure of governments in the Middle East and Africa. Despite these growing threats to U.S. security interests, the funding available to the Navy for new force structure and capabilities is projected to decline in the next decade due to a combination of rising personnel costs and legislative budget caps.

Fortunately, the Navy has an opportunity to adapt its surface fleet to address these challenges. Consider that in the next year the Navy will be:

- Identifying the systems and configuration of the Flight III *Arleigh Burke* destroyer, whose production has been restarted with the truncation of the DD(X);
- Determining specific requirements for the last 20 LCSs to make them more lethal;
- Implementing a plan to sustain its cruiser capacity given the cancellation of CG(X);
- Deciding the characteristics and acquisition approach for several surface fleet weapons and sensors; and
- Integrating into the fleet new ship classes such as the Joint High Speed Vessel (JHSV), Afloat Forward Staging Base (AFSB) and Mobile Landing Platform (MLP) that could reduce the demand for surface combatants.

The Navy should take advantage of these opportunities to achieve two main objectives:

[2] For the purposes of this paper, anti-access (A2) capabilities are associated with denying access to major fixed-point targets, especially large forward bases, whereas area-denial (AD) capabilities threaten mobile targets over an area of operations, principally maritime forces, to include those beyond the littorals. See Andrew Krepinevich, *Why AirSea Battle?* (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), pp. 8–11.

1. Restore the ability of surface combatants to gain and maintain access for the joint force through sea control; and
2. Sustain the ability of the surface fleet to provide a stabilizing presence and conduct security cooperation operations with allies and partners.

Surface Warfighting and the Centrality of Sea Control

As described in DoD's Air-Sea Battle Concept and Joint Operational Access Concept, and as characterized by Navy leaders, the Service's current role in joint warfighting is gaining and sustaining access for the joint force.[3] This responsibility often falls to naval forces because they can conduct sustained large-scale operations from an offshore sanctuary outside the range of enemy land-based weapons and are often the first element of the joint force to arrive at the conflict area. In comparison, air forces require fixed land bases that may not initially be prepared to support sustained operations or may be located in close proximity to the adversary.

The surface fleet's main contribution to access is intended to be sea control, as described in the Naval Operations Concept, consisting of anti-surface warfare (ASUW), anti-submarine warfare (ASW), mine warfare (MIW), anti-air warfare (AAW) and strike warfare against shore-based missile launchers.[4] While ground, air, and other naval forces will likely contribute to sea control in a variety of situations, they also have competing power-projection missions such as amphibious assault, strike, and associated surveillance and reconnaissance. Only surface combatants retain sea control as their primary responsibility.

Increases in the number and capability of anti-ship missiles suggest that to achieve sea control in the future, surface combatants will need to defeat enemy aircraft, ships, submarines, and shore-based missile launchers before they are within weapons range of U.S. forces. Otherwise the size of incoming missile salvos may overwhelm surface combatant defensive capacity. In other words, the surface fleet will need to concentrate on "killing the archer," or offensive sea control, as opposed to "shooting down the arrow," or defensive sea control.

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[3] The Air-Sea Battle concept is subordinate to the Joint Operational Access Concept and focuses on defeat of A2/AD threats in air and maritime areas adjacent to and in the conflict area. See DoD, *Air-Sea Battle* (Washington, DC: DoD, 2013), available at http://www.defense.gov/pubs/asb-conceptimplementation-summary-may-2013.pdf; Admiral Jonathan Greenert, U.S. Navy, Chief of Naval Operations, Statement before the House Armed Services Committee, "Planning for Sequestration in FY2014 and Perspectives of the Military Services on the Strategic Choices and Management Review," September 18, 2013; Christopher Cavas, "China Dominates Naval Strategy Discussion," *Defense News*, June 17, 2014.

[4] U.S. Navy, *Naval Operations Concept 2010.*

Surface navy leaders recently proposed a concept called "distributed lethality" that would improve the surface fleet's ability to attack enemy ships and missile launchers.[5] In this concept, almost all Navy surface ships, including supply and amphibious vessels, would carry offensive surface-to-surface missiles, providing more opportunities to engage enemy platforms before they can attack and complicating the adversary's targeting picture with a large number of potential threats. The primary shortfall in this new concept is that it does not address the most significant constraint on surface fleet offensive capacity—air defense. In wartime CGs and DDGs will devote much of their weapons capacity to defeating incoming missiles, leaving little room for offensive weapons that attack enemy ships, aircraft, or submarines. Further, supply and amphibious vessels that add long-range surface-to-surface missiles will make themselves more important targets to the enemy without improving their ability to protect themselves from missile attack.

To improve its capacity to "kill the archer," the surface fleet should start with its existing surface combatant fleet instead of arming new classes of ships. CGs and DDGs in particular can protect themselves in a high threat environment and have the sensor and communication capabilities to coordinate long-range attacks. To free up weapons capacity on these ships for offensive missions, the Navy should consider new approaches for air defense at sea and ballistic missile defense (BMD) ashore.

Establishing a New Approach to Sea-Based AAW

The main battery of a large surface combatant (CG or DDG) is its vertical launch system (VLS) magazine, which has a relatively small capacity and cannot be reloaded at sea.[6] Offensive ASUW, AAW, ASW, and strike weapons compete for space in the VLS magazine with defensive AAW weapons, so each cell not needed for air defense could be devoted instead to either weapons that can attack ships, aircraft, and submarines, or missile launchers and sensors ashore. Today only about one-third of VLS cells in a standard peacetime load-out contain offensive weapons such as Tomahawk or SM-6 missiles that can engage enemy weapon launchers or aircraft before they are in range to attack. This ratio would likely shrink even lower in wartime due to the increased need for air defense in protection of aircraft carriers.

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[5] Vice Admiral Thomas Rowden, Rear Admiral Pete Gumataotao, and Rear Admiral Peter Fanta, "Distributed Lethality," *Proceedings*, U.S. Naval Institute, 141/1/1, No. 343, January 2015, available at http://www.usni.org/magazines/proceedings/2015-01/distributed-lethality.

[6] Flight 1 DDG-51s have 90 VLS cells, whereas Flight II and IIa DDG-51s have 96 VLS cells; a CG has 122 cells. There are several potential approaches for at-sea reloading that could be pursued to increase the effective capacity of a large surface combatant.

War at sea today and in the future will likely include large anti-ship cruise missile (ASCM) salvos launched from ships, submarines, and aircraft, as well as smaller numbers of anti-ship ballistic missile (ASBM) attacks launched from shore. Today's long-range ASCMs cost $1–3 million, while an ASBM costs about $6–10 million.[7] Given the highly favorable cost engage ratios, an adversary could be expected to launch dozens of them in each attempt to disable or destroy a $1–2 billion DDG or the $11 billion carrier it defends.

The surface fleet could increase its defensive capacity—and significantly redress the cost imbalance—by adopting a new medium-range approach to air and missile defense. Today large surface combatants employ an integrated, layered defensive AAW scheme designed to engage enemy aircraft and missiles multiple times starting from long range (from 50 nm to more than 100 nm) through medium range (about 10–30 nm) to short range (less than about 5 nm). Each layer is serviced by a different set of interceptors. Those that are part of the long-range layer (e.g., SM-2 and SM-6) are the preferred means of defense. They are also the largest (taking up the most VLS space) and often the most expensive interceptors[8]. Electronic warfare (EW) systems are only used at short range against missiles that leak through the long and medium-range layers.

This layered defensive AAW approach puts surface combatants on the wrong end of weapon and cost exchange ratios. Using today's Navy doctrine,[9] the entire VLS magazine of a DDG (if entirely devoted to air defense) would be consumed against fewer than 50 ASCMs—missiles that would cost the enemy about 2 percent the price of the DDG.[10] Better, longer-range interceptors only exacerbate

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[7] An Indian/Russian BrahMos ASCM is $2 million–$3 million. See "Indian Army Demands More Missile Regiments," *Strategy Page* (blog), January 26, 2010, available at: http://www.strategypage. com/htmw/htart/articles/20100126.aspx. A U.S. Tomahawk LACM (comparable in sophistication to many ASCMs) is $1.3 million. See *DoD, Fiscal Year (FY) 15 Budget Estimates: Weapons Procurement, Navy* (Washington, DC: DoD, 2014), available at http://www.finance.hq.navy.mil/fmb/15pres/wpn_ book.pdf. Two Chinese analysts, Qiu Zhenwei and Long Haiyan, published the ASBM estimate in 2006. See Andrew S. Erickson, "Ballistic Trajectory—China Develops New Anti-Ship Missile," *Jane's Intelligence Review*, 22, January 4, 2010.

[8] Navy Air and Missile Defense Command (NAMDC), *The Navy Update and Role in Integrated Air and Missile Defense*, Power Point Presentation (Dahlgren, VA: NAMDC, August 31, 2009), available at http://www2.navalengineers.org/sections/flagship/documents/comrelbrief11aug09part2.ppt.

[9] A common U.S. air defense tactic is to shoot two interceptors at an incoming missile, look for successful engagement, and then shoot again if necessary. Therefore at least two interceptors are expended on every incoming missile.

[10] A Flight II or IIa DDG-51 has ninety-six VLS cells. A nominal wartime loadout would be forty-eight SM-2 interceptors, sixteen SM-6 interceptors, thirty-two ESSMs (eight cells), eight ASW rockets, and sixteen Tomahawk LACMs.

the problem. The SM-6 air defense interceptor that enters service this year costs about $4 million,[11] while an advanced ASCM costs about $2–3 million[12]. Given normal air defense doctrine, each defensive engagement using SM-6s will cost two to four times that of the ASCM it is intended to defeat.

A defensive AAW scheme centered instead on medium-range (10–30 nm)[13] interceptors such as the Evolved Sea Sparrow Missile (ESSM) would improve both the Navy's weapon and cost exchange ratios. ESSM engagements would be cheaper[14] than SM-6 engagements, and the ESSM Block 2 in development will have a fully active seeker that should achieve similar effectiveness to the SM-6. More importantly, medium-range interceptors such as ESSM are smaller than longer-range interceptors and can be placed in "quad packs" in each VLS cell, quadrupling the ship's defensive AAW capacity and/or enabling fewer VLS cells to be devoted to defensive AAW weapons. Moreover, shifting the air defense scheme to 10–30 nm will also enable EW systems to be used instead of kinetic interceptors against some enemy ASCMs. This could free up additional VLS cells for offensive operations. (With a long-range air defense concept, EW systems are only used at close range when kinetic interceptors fail.)

Similarly, a medium-range defensive AAW scheme will better enable the surface fleet to integrate new weapons such as lasers and electromagnetic rail guns (EMRG) that will likely be mature in the early to mid-2020s.[15] Because they do not require VLS cells, increasing the use of these systems for defensive AAW will enable the Navy to shift additional VLS capacity to offensive weapons. Lasers

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[11] For comparison, an SM-2 interceptor costs about $680,000. See *DoD, Fiscal Year (FY) 15 Budget Estimates: Weapons Procurement, Navy.*

[12] This is the cost of the Russia/India codeveloped BrahMos ASCM based on the Russian SS-N-26 Yahkont ASCM. The BrahMos ASCM is being actively marketed to Latin American and Southeast Asian militaries. See "Indian Army Demands More Missile Regiments," 2010; and "BrahMos Missile Can Be Exported to Southeast Asian, Latin American Nations," *Economic Times*, August 3, 2014. For comparison, a Tomahawk costs about $1.3 million. See *DoD, Fiscal Year (FY) 15 Budget Estimates: Weapons Procurement, Navy.*

[13] An escort will need defensive AAW capabilities that reach 20–30 nm to be able to defend nearby ships. For safety, Navy ships normally maintain at least 3–5 nm between ships. An ASCM travelling at Mach 2 will take about forty-five seconds to reach a targeted ship 20 nm away. An escort ship could engage the incoming ASCM with ESSMs at that range from 10 nm on the other side of the targeted ship. These engagements would occur more than 5 nm from the defended ship, after which the defended ship's point defenses—close-in weapon system (CIWS) and Rolling Airframe Missile (RAM)—would be in range to engage "leakers" that are not defeated by the ESSMs.

[14] An ESSM costs about $1.3 million. See *DoD, Fiscal Year (FY) 15 Budget Estimates: Weapons Procurement, Navy.*

[15] Ronald O'Rourke, *Navy DDG-51and DDG-1000 Destroyer Programs: Background and Issues for Congress*, RL32109 (Washington, DC: CRS, July 31,2014).

operate in a straight line from the weapon to the target and are limited by the horizon from engaging a sea-skimming ASCM at more than 10–15 nm, while power limitations in the emerging generation of lasers will constrain their effective range to about 10 nm.[16] An EMRG will be most effective against ASCMs and ASBMs from about 10–40 nm due to the time-of-fight of its unpowered projectile. At longer ranges the enemy missile could maneuver before the projectile would reach it.

Laser and EMRG weapons, however, will not be able to completely replace interceptors or point defense systems. Too much moisture in the air may reduce a laser's effectiveness, while clouds, dust, or fog can prevent the electro-optical directors that aim the lasers from "seeing" the target. An EMRG is not affected by atmospheric effects but will require more electrical power than a CG or *Arleigh Burke* DDG can generate. It will have to be initially deployed on a separate vessel such as a JHSV or *Zumwalt* DDG. And even when the required power levels are available, the EMRG rate of fire will only be 6–10 shots per minute, which will limit the enemy missile salvo size that can be engaged to between three and six missiles.[17]

A final advantage of a medium-range air defense scheme is that it acknowledges the challenges in obtaining over-the-horizon targeting data in an A2/AD environment where data links could be jammed. Detecting a sea-skimming ASCM at the SM-6's maximum range would require a surface sensor positioned more than 100 nm forward from the surface combatant or an aircraft at more than 10,000 feet altitude above the fleet. But a CG or DDG could detect the same ASCM at 10–30 nm using its organic sensors, including its embarked helicopter.

The Navy will still need the SM-6, however, for offensive AAW. The SM-6 can engage enemy aircraft outside their ASCM range and are much less expensive than the aircraft they are designed to destroy, producing a more advantageous cost exchange ratio than using the SM-6 against enemy ASCMs. Enemy aircraft also generally fly at higher altitudes than ASCMs, enabling them to be detected farther away by shipboard radars whose visibility is otherwise limited by the horizon.

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[16] Ronald O'Rourke, *Navy Shipboard Lasers for Surface, Air, and Missile Defense: Background and Issues for Congress*, R41526 (Washington, DC: CRS, July 31, 2014). Also, as lasers become more common in defensive AAW, potential adversaries may begin attempting to harden missiles against laser attack.

[17] For example, a nominal ASCM speed is Mach 3.5, or about 2500 kts, and EMRG projectiles will average about Mach 5, or about 3600 kts. The ASCM will travel about 6 nm between EMRG shots if it has a 10 shot/minute firing rate. If the ASCM salvo is initially engaged at 30 nm, the EMRG will be able to shoot five times at the incoming salvo before it arrives at the ship. With a SS-L-S doctrine, at most three missiles could be engaged, and with a S-L-S doctrine, at most five could be engaged.

When available, the engagement range for offensive AAW could be enhanced by over-the-horizon targeting information via existing datalinks.

This new approach to sea-based AAW would increase the capacity of surface combatants for air defense and enable them to shift more of their VLS cells to host offensive missiles. This would allow surface combatants to kill enemy archers, as opposed to defeating their individual arrows.

Implementing new approaches to BMD

Adding more offensive weapons to surface combatant VLS batteries will only improve surface fleet warfighting if those ships are not tied down providing BMD to allies and partners. BMD is a relatively new mission for surface combatants; prior to 2005 no Navy ships were assigned to BMD operations, and force structure requirements did not reflect an allocation for this mission.[18] Now the Navy plans to have 43 BMD-capable ships by 2019[19] and on average two large surface combatants continuously deployed in the Mediterranean Sea, Arabian Gulf, and Western Pacific Ocean to provide BMD for partners and allies overseas. Supporting these demands requires at least 18 CGs or DDGs.[20]

Large surface combatants are attractive for BMD overseas because they can protect a large area (or "footprint") since the Navy's SM-3 interceptor destroys the ballistic missile in its "mid-course" phase outside the atmosphere. But the CGs and DDGs assigned to BMD missions are largely unavailable for defending carriers, hunting submarines, or interdicting enemy aircraft. The geometry required to intercept a ballistic missile prevents the BMD ship from maneuvering outside of a relatively small area while the readiness needed to promptly respond

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[18] Ronald O'Rourke, *Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress*, RL33745 (Washington, DC: CRS, July 31, 2014).

[19] Missile Defense Agency, "Aegis Ballistic Missile Defense: Status," available at http://www.mda.mil/system/aegis_status.html, accessed July 2, 2014; O'Rourke, *Navy Aegis Ballistic Missile Defense (BMD) Program*.

[20] This calculation assumes two BMD-capable ships are deployed in the Mediterranean as part of the European Phased Adaptive Approach and in defense of Middle East partners; two are deployed in the Middle East to defend Arabian Gulf partners; and two are deployed in the Western Pacific to defend Japan and South Korea. This level of deployment is consistent with press reports of BMD deployments and Navy leader statements. "Forward Deployed Naval Force" (FDNF) ships based in Rota, Spain, and Yokosuka, Japan, source European and Pacific BMD deployments, respectively. The FDNF operational model requires two ships for each one underway. BMD ships in the Middle East would deploy rotationally from the United States, requiring five ships for each one underway overseas. See Admiral Jonathan Greenert, U.S. Navy Chief of Naval Operations, Statement before the House Armed Services Committee, "FY 2014 Department of Navy Posture," April 16, 2013, p. 10; Christopher Cavas, "First U.S. BMD Ship Leaves for Rota," *Defense News*, February 1, 2014.

to enemy missile launches limits the sensor and personnel resources that can be spared for other missions.

The demand for BMD ships will very likely continue to increase. Over the next decade, U.S. competitors plan to deploy ballistic missiles with stealthier warheads and "penetration aids" such as decoys or jammers designed to confuse or deceive the Navy's interceptors. Rivals will also field longer-range ballistic missiles, which are faster and shrink the footprint that can be protected. More interceptors and more ships will therefore be required in the future to defend the same area. Unless an alternative method is developed to defend military and civilian targets ashore, an increasing number of CGs and DDGs will be consigned to BMD stations overseas.

Shore-based BMD capabilities could reduce the demand for BMD ships. Aegis Ashore provides the same large, multiple-country footprint against short and intermediate-range ballistic missiles as a BMD-capable CG or DDG and will be deployed to Europe starting in 2015.[21] This system includes the same AN/SPY-1 radar and Aegis BMD version 5.0 software being installed on DDG-51 Flight IIa ships along with a 24-cell VLS carrying SM-3 interceptors.

The Navy should pursue replacing today's BMD ship stations in the Middle East and Japan with Aegis Ashore to defend fixed locations against known threats. The cost of an Aegis Ashore system is about $750 million,[22] while a Flight IIa DDG-51 costs about $1.6 billion and a Flight III DDG-51 is estimated to cost $1.9 billion.[23] The 2–3 Aegis Ashore systems that could be purchased for the cost of one DDG would be able to take the place of 4–15 DDGs, depending on whether the DDGs are forward-based.

Achieving small combatant lethality

Any plan to improve surface fleet warfighting must address small surface combatants (SSC), which the Navy intends to be more than a third of the surface fleet by the middle of the next decade.[24] The only SSC the Navy is building today is LCS, which lacks the capability to engage enemy platforms outside their ASCM range or to defend nearby ships from air and missile attack. LCS is instead designed to deploy a single mission package for ASW, ASUW, or mine

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[21] Specifically, Aegis Ashore systems will be deployed to Poland in 2015 and to Romania in 2018.

[22] "SM-3 BMD, in From the Sea: EPAA & Aegis Ashore," *Defense Industry Daily*, available at http://www.defenseindustrydaily.com/land-based-sm-3s-for-israel-04986/, accessed July 4, 2014.

[23] Deputy Chief of Naval Operations (CNO), *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for FY2015* (Washington, DC: DoD, June 2014).

[24] Ibid.

countermeasures (MCM) operations. The Navy recently announced a plan that would improve SSC lethality by modifying the last 20 LCSs to be fast frigates (FF). The new FF would carry the LCS ASW mission package, improved armor, additional self-defense systems, and long-range ASUW missiles in a topside "box" launcher.[25]

This plan will produce SSCs that are able to engage enemy ships outside their ASCM range. It will not, however, significantly enhance surface fleet warfighting. As A2/AD capabilities proliferate and improve, noncombatant logistics ships and civilian convoys will need to be protected in more places and situations from ASCMs launched by enemy aircraft, coastal launchers, surface ships, and submarines. CGs and DDGs will have to provide this protection since the LCS and planned FF have only self-defense AAW systems.[26] While the Navy is also evaluating incorporating the SLQ-32 SEWIP EW system into the LCS and FF, it will not eliminate the need for air defense interceptors in those situations where non-kinetic EW defense is unsuccessful.

The need for CG and DDG escorts will likely result in all the Navy large surface combatants being taken up for defensive missions in wartime and substantially degrade the surface fleet's overall combat potential. As shown in Figure 1 the Navy's requirement for large surface combatants is 88. Each of the Navy's 11 CSGs notionally includes five CG or DDG escorts[27] and at least 18 more will be tied up in BMD. That leaves at most 15 CGs or DDGs available for escort missions—assuming air threats do not require additional CSG escorts and ships are not lost in combat or laid up for repair of damage suffered in combat. Since

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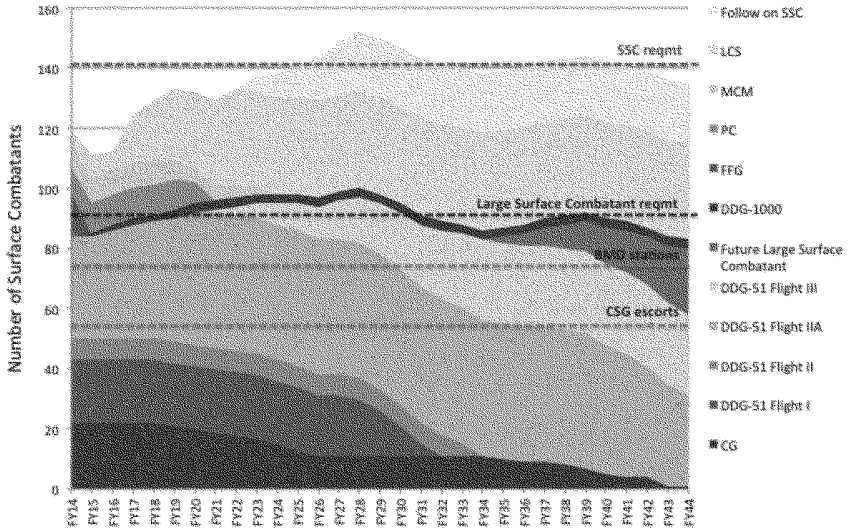
[25] Sam LeGrone, "SNA-Modified Littoral Combat Ship Class Changed To Fast Frigate," *USNI News*, January 15, 2015, available at http://news.usni.org/2015/01/15/sna-modified-littoral-combat-ship-class-changed-fast-frigate, accessed April 1, 2015; and Sam LeGrone, "Upgunned LCS Hulls Picked as Navy's Next Small Surface Combatant," *USNI News*, December 11, 2014, available at http://news.usni.org/2014/12/11/gunned-lcs-hulls-picked-navys-next-small-surface-combatant, accessed April 1, 2015.

[26] Given the LCS's short-range missiles, a defended ship would have to operate too close to the LCS to permit effective maneuvering and the LCS would have to be positioned between the incoming missile and the escorted ship or directly in front of or behind the escorted ship. To ensure the incoming ASCM is intercepted, two RAM would likely be shot at each incoming ASCM. This would result in the LCS's magazine of RAMs being exhausted after ten ASCM attacks. In the LCS's envisioned littoral operating environment, more ASCM attacks would likely occur before the ship could reload its RAM magazine.

[27] Department of the Navy, CNO, *Policy for Baseline Composition and Basic Mission Capabilities for Major Afloat Navy and Naval Groups*, OPNAVINST 3501.316B (Washington, DC: DoD, October 21, 2010), available at http://doni.documentservices.dla.mil/Directives/03000%20Naval%20Operations%20and%20Readiness/03-500%20Training%20and%20 Readiness%20Services/3501.316B.pdf.

each convoy will require multiple escorts, it is likely all 15 will be needed for these operations.

Figure 1: Surface combatant inventory as described in Navy's FY 2015 30-year shipbuilding plan



It would be suboptimal to allocate large surface combatants with more than 90 VLS cells and multiple gun systems to defensive missions while SSCs with a dozen ASCMs constitute the surface fleet's wartime offensive capability. Instead, SSCs should escort noncombatant ships in place of CGs and DDGs. With the medium-range air defense scheme described above, the Navy could equip FFs with VLS magazines and lasers to provide them with a potent air defense capability at a range of 10–30 nm, enough for them to protect a nearby ship. While the LCS sea frame may only be able to support a 16 or 24-cell VLS magazine, with medium-range interceptors such as ESSM that fit four to a VLS cell, this would be as much air defense capacity as provided by today's DDGs.

Equipping the new FF with a VLS magazine would also enable it to carry offensive ASUW missiles such as the Naval Strike Missile and future Long Range Anti-Ship Missile (LRASM), or use multi-mission missiles such as the SM-2 in surface-to-surface mode. The Navy could thus increase the lethality of the FF against enemy surface ships while also relieving CGs and DDGs of escort duties, allowing them to go on offense as well.

PRESENCE AND READINESS FOR WARFIGHTING AND MARITIME SECURITY

The actions of revisionist states such as China and Russia are increasing demands from U.S. allies and partners for naval forces to support maritime security and training, and to provide a stabilizing presence. The gap between these demands and the supply of naval forces is growing. For example, due to sequestration and budget caps imposed by the 2011 Budget Control Act (BCA), naval deployments to U.S. Southern Command stopped entirely during 2013 and have not returned to their pre-2013 levels. [28] Worldwide, validated Combatant Commander requirements for presence have exceeded the fleet's inventory of ships by more than 50 percent over the last three years[29].

The Navy's requirement for 88 large surface combatants is designed to address projected needs for surface fleet warfighting and presence in stressing operational scenarios. According to the Navy's shipbuilding plan depicted in Figure 1 the fleet will reach this number in FY 2018. Because almost all of these ships are in the fleet, under construction, or on contract, the Navy is likely to reach its numerical objective. To meet its mission requirements, however, the surface fleet will need to improve the capability of individual ships as describe above.

While the Navy could have enough capable large surface combatants within the next few years, that does not guarantee those ships will be able to sustain naval presence overseas. Over the last three years, surface force leaders have cited manning, material condition, and training shortfalls as the most significant challenges facing the surface fleet[30]. The Navy recently announced an "Optimized Fleet Readiness Plan" (OFRP) that would lengthen operational cycles for large surface combatants and other CSG units to ensure sufficient time to train crews and maintain ships and aircraft between deployments.[31] This plan includes a single seven-month deployment over a 36-month cycle, which will produce less presence than today's deployment model. Therefore, the Navy will only be

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[28] Sam LeGrone, "Navy to Send Ship on Drug Patrols After Four Month Hiatus," *USNI News*, July 15, 2013, available at http://news.usni.org/2013/07/15/navy-to-send-ship-on-drug-patrols-after-four-month-hiatus, accessed April 1, 2015; Jennifer Lebron, "Greenert Provides Navy Update in Pentagon News Conference," *DoD News*, July 22, 2013, available at http://www.defense.gov/news/newsarticle.aspx?id=120497, accessed April 1, 2015.

[29] Kris Osborn, "CNO Tells Congress the US Needs 450-Ship Navy," *Military.com News*, March 12, 2014, available at http://www.military.com/daily-news/2014/03/12/cno-tells-congress-the-us-needs-450-ship-navy.html, accessed April 2, 2015.

[30] Thomas Copeman, *Vision for the 2026 Surface Fleet* (Washington, DC: DoD, 2014).

[31] Daisy Khalifa, "Gortney's Readiness: Predictable, Adaptable for Sailors," *Seapower Magazine*, April 8, 2014, available at http://www.seapowermagazine.org/sas/stories/20140408-gortney-redefines-readiness.html, accessed April 1, 2015.

successful in implementing OFRP if Combatant Commanders agree to accept a reduction in the forces deployed to their regions.

SSCs such as guided missile frigates (FFGs), minesweepers (MCM), and patrol coastal (PC) ships are intended to conduct less stressing missions such as security cooperation, training, maritime security, and mine clearing. But, as shown in Figure 1, by the end of this fiscal year, the Navy will have fewer than half its required number of SSCs as it decommissions its remaining FFGs faster than LCSs are delivered to replace them.[32] Although Figure 1 implies the number of SSCs will return to the required number by FY2024, it is based on the Navy's shipbuilding plan, which assumes future shipbuilding funding will exceed the historical average. Since DoD remains under the BCA budget caps until FY 2021, it is unlikely these higher levels of ship construction spending will be realized, and the number of SSCs built could very likely be lower than planned. Moreover, the Navy's planned FF ships will be more capable and therefore likely cost more than the LCS it will replace. This could further reduce the number of SSCs the Navy is able to build.

To address the large and persistent gap in SSC inventory and overseas presence, the Navy should equip noncombatant ships of the "National Fleet" to conduct some missions that would otherwise be performed by SSCs. The National Fleet formally consists of the U.S. Navy and U.S. Coast Guard, which together have 370 ships.[33] In the U.S. Navy's Battle Force there are about 60 noncombatant support and logistics ships, including (by FY 2016) seven JHSVs, two MLPs and one AFSB designed to host an array of unmanned systems, helicopters, and small boats. The National Fleet can also be considered to include the Maritime Sealift Command's 26 prepositioning ships and the Department of Transportation's 117 National Defense Reserve Fleet (NDRF) ships, 46 of which form the U.S. Navy's Ready Reserve Fleet.[34]

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[32] OPNAV N8, *Navy Combatant Vessel Force Structure Requirement, Report to Congress* (Washington, DC: OPNAV N8, January, 2013); Deputy CNO, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for FY2015*.

[33] The National Fleet is described in Department of the Navy, Office of the CNO and United States Coast Guard, Office of the Commandant, *National Fleet Plan* (Washington, DC: DoD, March 2014), and it consists of 290 Navy Battle Force Ships and ninety USCG cutters as of August 3, 2014. See Ronald O'Rourke, *Coast Guard Cutter Procurement: Background and Issues for Congress*, R42567 (Washington, DC: CRS, 2014).

[34] The forty-six RRF ships consist of thirty-five roll-on/roll off (RO/RO) vessels (which includes eight Fast Sealift Support vessels, FSS), two heavy-lift or barge carrying ships, six auxiliary crane ships, one tanker, and two aviation repair vessels. See Department of Transportation, "National Defense Reserve Fleet," available at http://www.marad.dot.gov/ships_shipping_landing_page/national_security/ship_operations/national_defense_reserve_fleet/national_defense_reserve_fleet.htm,

The LCS mission package concept could provide a way for these noncombatant ships to contribute in low threat environments to missions normally conducted by SSCs. In mine warfare and maritime security, for example, the LCS acts as a "mother ship," deploying off-board systems that conduct the mission, rather than as a tactical platform that directly does so. Mines are hunted today with autonomous vehicles such as the Mk-18 Mod 2 unmanned underwater vehicle (UUV) and neutralized with remotely operated systems including the SLQ-60 UUV. Similarly, pirates or traffickers are typically located using helicopters or unmanned vehicles such as the MQ-8C vertical take off UAV (VTUAV), and intercepted by rigid-hull inflatable boats (RHIB). These systems could also be hosted and deployed from a logistics ship, a JHSV or an AFSB.

Using noncombatant ships for military missions will require augmenting these ships' civilian crew with military personnel and establishing legal arrangements to allow the ships to use force to defend itself and other ships. These arrangements have already been made with the Afloat Forward Staging Base-Interim (AFSB-I) USS *Ponce,* which supports mine clearing, maritime security, and partner training today as a noncombatant ship in the Persian Gulf.

To facilitate the use of LCS mission packages on other ship classes, the Navy should separate the management of mission packages from the LCS program. An independent program executive for mission packages would ensure they are able to interface with a wide variety of combatant and noncombatant ships. Further, the separate organization could explore and develop new mission packages for operations such as disaster response, preventive medical care, signals intelligence, airborne surveillance, counter-illicit trafficking, and electronic warfare.

SETTING A COURSE FOR THE SURFACE FLEET

To sum up, the U.S. Navy has a limited window of opportunity to establish a new framework for surface warfare given changes in its planned family of surface combatants, a more demanding security environment, and continued fiscal challenges. This new approach will address, in particular, the diminishing offensive capability of large surface combatants and the growing gap between SSC supply and demand.

Establishing this new framework will require significant cultural changes for the surface fleet. For example, freeing up CG and DDG weapon capacity for offensive operations can only come by evolving the fleet's approach to air defense in ways that will increase its capacity while at the same time reducing the air defense's mission demands on the VLS magazine. And the only way the surface fleet can address the shortfall in SSCs–at least in the near term–is by enabling

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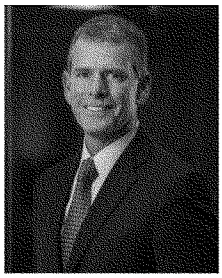
accessed August 3, 2014. That the national fleet could include MSC and NDRF ships was argued most prominently by now-Deputy Secretary of Defense Robert Work in a 2008 paper: Robert Work, *The U.S. Navy: Charting a Course for Tomorrow's Fleet* (Washington, DC: Center for Strategic and Budgetary Assessments, 2008).

noncombatant ships to perform operations that were previously conducted only by warships.

But these changes are possible. The key will be establishing an overarching and unifying concept for surface warfare, such as offensive sea control, and aligning the surface fleet's ships, weapons, sensors and processes to focus on supporting that concept. That will enable surface force leaders to establish priorities and make choices when fiscal constraints and external demands do not provide for easy decisions.

About the Center for Strategic and Budgetary Assessments
The Center for Strategic and Budgetary Assessments (CSBA) is an independent, nonpartisan policy research institute established to promote innovative thinking and debate about national security strategy and investment options. CSBA's goal is to enable policymakers to make informed decisions on matters of strategy, security policy and resource allocation. CSBA provides timely, impartial and insightful analyses to senior decision makers in the executive and legislative branches, as well as to the media and the broader national security community. CSBA encourages thoughtful participation in the development of national security strategy and policy, and in the allocation of scarce human and capital resources. CSBA's analysis and outreach focus on key questions related to existing and emerging threats to US national security. Meeting these challenges will require transforming the national security establishment, and we are devoted to helping achieve this end.

Mr. Bryan Clark.



Prior to joining CSBA in 2013, Bryan Clark was Special Assistant to the Chief of Naval Operations and Director of his Commander's Action Group, where he led development of Navy strategy and implemented new initiatives in electromagnetic spectrum operations, undersea warfare, expeditionary operations and personnel and readiness management.

Mr. Clark served in the Navy headquarters staff from 2004 to 2011, leading studies in the Assessment Division and participating in the 2006 and 2010 Quadrennial Defense Reviews. His areas of emphasis were modeling and simulation, strategic planning and institutional reform and governance. Prior to retiring from the Navy in 2007, Mr. Clark was an enlisted and officer submariner, serving in afloat and ashore submarine operational and training assignments including tours as Chief Engineer and Operations Officer at the Navy's nuclear power training unit. Mr. Clark holds a Master of Science in National Security Studies from the National War College and a Bachelor of Science in Chemistry and Philosophy from the University of Idaho. He is the recipient of the Department of the Navy Superior Service Medal and the Legion of Merit.

DISCLOSURE FORM FOR WITNESSES
COMMITTEE ON ARMED SERVICES
U.S. HOUSE OF REPRESENTATIVES

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(5), of the Rules of the U.S. House of Representatives for the 114th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants), or contracts or payments originating with a foreign government, received during the current and two previous calendar years either by the witness or by an entity represented by the witness and related to the subject matter of the hearing. This form is intended to assist witnesses appearing before the House Committee on Armed Services in complying with the House rule. Please note that a copy of these statements, with appropriate redactions to protect the witness's personal privacy (including home address and phone number) will be made publicly available in electronic form not later than one day after the witness's appearance before the committee. Witnesses may list additional grants, contracts, or payments on additional sheets, if necessary.

Witness name: Bryan Clark

Capacity in which appearing: (check one)

○ Individual

◉ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Center for Strategic and Budgetary Assessments

Federal Contract or Grant Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) or grants (including subgrants) with the federal government, please provide the following information:

2015

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
W91QF0-15-P-0010	Army War College	$55,000	Strategic Choices exercise

2014

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
SP4705-10-C-0019	National Defense University	$86,000	Secretary of Defense Corporate Fellows program
N00189-13-F-Z085	Department of the Navy	$120,987	Portfolio Rebalancing Exercise
HR0011-14-C-0112	DARPA	$252,778	System of Systems Transition study
HQ0034-09-D-3007	OSD/ONA	2,136,487	Multiple delivery orders

2013

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
HR0011-13-C-0028	DARPA	$174,939	Battle Network Competitions study
SP4705-10-C-0019	National Defense University	$84,000	Secretary of Defense Corporate Fellows program
HQ0034-09-D-3007	OSD/ONA	$1,200,000	Multiple delivery orders
W91QF0-13-P-0029	Army War College	$62,890	Portfolio Rebalancing Exercise
W91QF0-14-P-0013	Army War College	$57,915	Portfolio Rebalancing Exercise
GS-10F-022AA	National Commission on the Structure of the Air Force	$74,728	Portfolio Rebalancing and Strategic Analysis

Foreign Government Contract or Payment Information: If you or the entity you represent before the Committee on Armed Services has contracts or payments originating from a foreign government, please provide the following information:

2015

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment
Embassy of Japan	Japan	$110,000	Defense Planning Seminar

2014

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment
Embassy of Japan	Japan	$100,000	Defense Planning Seminar
UAE	UAE	$125,000	Regional Security workshops
Embassy of Japan	Japan	$30,000	Meetings and briefings

2013

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment
Embassy of Japan	Japan	$100,000	Defense Planning Seminar
Embassy of Japan	Japan	$30,000	Meetings and briefings

April 15, 2015

Testimony before the House Armed Services Committee
Subcommittee on Seapower and Projection Forces

Prepared Statement of Bryan McGrath
Managing Director, The FerryBridge Group LLC and Assistant Director, Hudson Institute Center for American Seapower

All testimony herein submitted represents the personal views of Bryan McGrath

Thank you Chairman Forbes, Ranking Member Courtney and members of the Seapower and Projection Forces subcommittee for the opportunity to testify and to submit this written statement for the record.

It is especially gratifying to be asked to give testimony on the role of surface forces in presence, deterrence, and warfighting. I served for 21 years in our nation's surface forces, from 1987 until 2008, with tours in frigates and cruisers and command of the Destroyer BULKELEY out of Norfolk. It was an honor and a privilege to take to sea under our nation's flag, and in my present-day work, I continue to advocate for powerful and numerous surface forces as part of our Navy's approach to meeting its global commitments.

Presence, Deterrence, and Warfighting

It is fortuitous that the Committee has chosen to hear testimony on the topic of presence, deterrence, and warfighting, as these are the three primary functions of this nation's Navy, and achieving the right mix and balance among the forces necessary to accomplish all three is crucial.

Naval presence, often referred to as forward presence, serves a variety of ends. It demonstrates our commitment to the responsibilities of world leadership by ensuring ready and capable forces are never far from where disaster may strike. Furthermore, it is a sign to our friends and allies of our continuing commitment to the security and prosperity gained from the free movement of commerce on the earth's oceans. The primary attribute of a force optimized for presence would be its size, primarily measured in the number of ships. The combat capability of those ships would not be nearly as important as how numerous they were.

Moving up the scale of violence, we come to deterrence. Deterrence is a function of two attributes, the first being the capability of the force available, and the second being the proximity of the force. Clearly, numbers matter in deterrence, but in order to achieve its noble ends, those platforms must have capability. Essentially, they must be powerful enough to convince a potential adversary that the pain he will suffer in response to his aggression outweighs the benefit he will gain from it (deterrence by punishment), and/or the capability arrayed against the aggressor must be capable enough to convince him that his aggression will not succeed (deterrence by denial). Finally, and this is where forward presence comes in, these forces must be close enough to be able to interpose themselves meaningfully between an aggressor and his desires.

Finally, we come to war-fighting, which for the modern U.S. Navy means projecting power ashore in contested environments from the sea, after first having imposed operationally relevant local sea control. This link between sea control and power projection is often overlooked, but it is iron-clad. A Navy wishing to project power ashore must control the seas from which it wishes to operate and the skies above them.

All naval platforms are not alike when it comes to the relative contributions that they make to these the three primary functions of presence, deterrence, and war-fighting. For example, the modern, VIRGINIA Class SSN is a marvel of warfighting capability. It can locate and destroy enemy ships and submarines, it can attack key targets ashore, and it can silently lurk off the coast of an adversary's mainland conducting sophisticated surveillance operations. The key of course to its warfighting prowess is the fact that it operates below the surface of the ocean, where due to both the professionalism of the submarine corps and the technology it operates, they are virtually undetectable. If the United States goes to war against any nation fielding a Navy of any kind, our SSN's will likely punch way above their weight in terms of a contribution to combat effectiveness.

However, attack submarines contribute little to presence and only modestly to conventional deterrence, both of which are the inevitable downside of the platform's competitive advantage in combat—its ability to remain un-located.

Surface ships on the other hand, make essential contributions across the spectrum of operations, though there are differences among surface ships. For instance, the LCS, with its relatively low cost and innovative crewing concept, is an excellent presence platform. Because of its size and draft, it can be accommodated in a wide range of ports, and as it is only modestly armed, it is a good fit for operating with partner nations of limited naval capability. The utility of the LCS as a deterrent and a war-fighting platform is relatively less than its utility as a presence vehicle. It is not without value in these functions, it is simply optimized for the presence mission. The added capability that will be integrated into the FF class raises the platform's value in both deterrence and warfighting, especially with regard to naval adventurism.

BURKE Class destroyers on the other hand are effective as vehicles of presence, deterrence, and warfighting. Bristling with combat power in its weapons and sensors, ton for ton these ships are among the most valuable assets in the U.S. Navy today by virtue of their utility in peace, war, and the space in-between. That said, a new generation of threats, a decline in surface force proficiency in some vital missions, and a

lack of operational imagination raises important questions about the future of the surface force.

How Did We Get Here?

The Navy I was commissioned into in the Summer of 1987 was near the zenith of its Reagan-era power, with nearly 600 ships and 15 carrier battle groups operating forward in the Mediterranean, the Arabian Gulf, and the Western Pacific. Not only was that Navy large, but it was capable and proficient. My first ship was a fourteen year old, single screw Knox Class frigate. It did not have anything resembling what we call today a "Combat System"; rather, it had a number of sensors and weapons that were only marginally networked together. But those weapons and sensors were applied day in and day out in the pursuit of mastering a peer competitor in the Soviet Navy. By way of explanation, I was commissioned at the University of Virginia on a Saturday, graduated the next day, and reported to my ship two days later. Within a month, I was standing watch on the bridge of a ship that was actively tracking a Soviet ballistic missile submarine operating in the Western Atlantic. While we did not field an integrated combat system, we had a capable anti-submarine warfare (ASW) suite and a team of Sonar Technicians and operators who had been tracking Soviet submarines for their entire careers.

One year later, we deployed to the Mediterranean Sea, and we operated in proximity to units of the Soviet surface force. For days at a time, we would passively track electronic emissions from those units in order to localize them, maintaining fire control solutions which could be readily fed into our Harpoon surface to surface missile system should the need arise.

The point of this excursion is to state without reservation that the ship on which I served was one of the *least capable combatants* in the Navy of the time, yet it could still track and neutralize Soviet submarines and localize and engage Soviet surface forces far beyond the visual horizon.

The Berlin Wall fell, and the United States Navy emerged as the uncontested master of the seas. Throughout the 1990's and in the absence of a viable threat to our ability to control the seas, the Surface Force placed additional emphasis on overland strike with the Tomahawk Land Attack Missile and in maritime security tasks such as Visit, Board, Search and Seizure—including non-compliant boardings. Anti-submarine Warfare (ASW) and Anti-surface Warfare (ASuW) were de-emphasized, as the threat in each area had dramatically receded. We also leveraged the investment the Navy made in the AEGIS weapon system and concentrated on mitigating the anti-ship cruise missile

threat, while we de-emphasized all of the tactics and procedures that we learned in the 1980's to deal with the Soviet Outer Air Battle threat—because that threat had also largely ceased to exist.

By the time I assumed command of the destroyer USS BULKELEY in 2004, much had changed. The ship I commanded was one of the most sophisticated warships on the face of the earth with a truly integrated combat system and a command and control suite without parallel. But that ship—commissioned only three years before I took command—had no over the horizon surface to surface missile system. Put another way, we were a destroyer that could not destroy—other ships at least. As part of the peace dividend and in recognition of the lack of a blue water threat, the Harpoon missile system was removed from the Flight IIA Arleigh Burke Destroyers as a corporate Navy decision was made to rely on the carrier air wing and the submarine force to perform the ASuW mission. As a matter of fact, the United States Navy has not built a ship that could kill another ship over the horizon since the USS PORTER (DDG 78) was commissioned in January of 1999.

And while my ship the USS BULKELEY had an outstanding Sonar Suite—far better than that which I had on my first ship in 1987—years of decline in surface force ASW proficiency due to the mission having been de-emphasized resulted in an unshakable conviction that if I had to face a submarine threat, I would rather have done it on the old, loud frigate with the highly proficient team than on my new destroyer whose complement of sonar technicians had declined along with their proficiency. The war on terror and the post-USS COLE force protection measures that we piled on our ships created a situation in which my sonar techs were unfortunately more likely to find themselves manning .50 caliber mounts or serving on boarding teams than they were to be hunting submarines. This was the reality of the post-Cold War Navy. We were great at boarding dhows in the Persian Gulf, at firing TLAMS hundreds of miles away, and at dealing with anti-ship cruise missiles (ASCM) close aboard. The blocking and tackling of killing ships and submarines was a fading memory.

The Rising Threat

True turning points in history are difficult to pinpoint, and trying to do so without the accumulated benefit of time is fraught with complexity. However, the Taiwan Strait Crisis of 1996 may prove to have been just such a turning point. Without retelling the history here, it is not illogical to believe that the nearly 20 year program of naval modernization underway in China and the development of its Anti-Access and Area Denial (A2AD) capability are in no small measures associated with a realization by the

PRC in 1996 that American naval dominance in East Asia must be contested. During this twenty years, the U.S. Navy has gotten smaller even as it (as discussed earlier), purposefully de-emphasized the capabilities that now are required to counter the PRC's A2AD complex.

Not only has the Navy gotten smaller, but it has concentrated its striking power in the aircraft carrier and its associated air wing, perhaps with the exception of the OHIO Class SSGN program. The Navy of today will fight in Carrier Strike Groups (CSG), and the surface vessels associated with those CSG's are will rarely stray far from the protective cover of the air wing during war. This is the direct result of investment decisions of the 1990's discussed earlier (the de-emphasis of ASuW in particular) and an untested, risk averse, and unimaginative method of employing surface forces in wartime. This approach leads to an unsatisfactory outcomes. The concentration of naval forces reduces the complexity of the targeting problem we present to an adversary. This is not meant to infer that the process of finding naval forces at sea who wish to hide has become elementary. Quite the contrary, it is still a difficult undertaking and will remain so in an era of Joint combined arms approaches to power projection. However, our operational approach would suggest to a crafty adversary that once they had indeed located the aircraft carrier, the overwhelming majority of additional naval power available is likely to be found in close proximity. Not only does this greatly reduce the adversary's targeting complexity, but it also sub-optimizes one of the greatest attributes of naval power, that of the mobility of surface forces.

The situation described in the previous paragraph is at the heart of some analyst's angst about the viability of surface forces in naval combat. After years of neglecting ASW and ASuW, we are now faced with a rising peer competitor who is forcing us to face this neglect. We have a surface force that is less capable of destroying enemy surface and submarine forces than its Cold-War predecessor, and we have a carrier air wing that has privileged short-range manned overland strike to the point where its effectiveness in traditional war at sea tasks is questionable.

I will leave for another day my thoughts on how the carrier air wing should evolve to meet the challenges of contested operations in an A2AD environment, and turn now to some thoughts on how the U.S. Navy Surface Force must rise to meet the challenges of future high end warfare.

Offensive Sea Control

I use the term "offensive sea control" guardedly, as purists reading this document will quite rightly take issue with it. True sea control is neither offensive nor defensive; it is

more a state of being with a temporal and geographical limit. However, I have begun to use the term to convey a sense of action, a sense of movement, a sense of going on the offense. In the future, sophisticated sea denial strategies will drive the U.S. Navy to look at "seizing" temporary and limited pockets of sea control in order to enable other operations. Over time, the CSG has—with the exception of its overland striking power—become an instrument of defense. Primarily, an instrument of defending itself. In an era of little or no threat, the Navy packed in its defense around the carrier and it positioned itself relatively close to an adversary in order to generate maximal combat sorties. Against a high end, near peer implementing an A2AD strategy, this will no longer be possible. The CSG will have to fight its way to portions of the ocean from which it can then execute strikes, and then quickly retire and/or relocate. In essence, this resembles the island-hopping campaign of the Second World War, except that whereas in those battles, islands were seized (and often held) to enable follow on operations, in the future, naval forces will "seize" and "hold" pieces of the ocean and the skies above them in order to strike targets ashore and to hold enemy fleets at risk.

Critical to any concept of offensive sea control is a more lethal, mobile, and innovatively employed Surface Force. We must begin to more holistically evaluate risk, and we must recognize that our current concepts of force employment provide a determined foe with increasingly less complexity.

What is to be Done?

Naval forces in general and the Surface Force in particular need to become less predictable and disaggregate in meaningful ways that cause an adversary to expend precious intelligence, surveillance, and reconnaissance (ISR) resources in trying to locate them. In order to ensure adversary ISR is siphoned off, those surface forces must be more lethal than those we currently field, holding more—and more diverse—adversary targets at risk. Additionally, a more powerful and disaggregated surface force will necessarily force an adversary to apply a limited amount of weapons against a larger number of targets, diluting constructive weapons assignments against any single target.

It will not be enough to simply increase the weaponry on existing surface ships without operating them differently. The Navy must begin to assume additional risk in dispersing the fleet into powerful surface action groups capable of defending themselves and conducting sea control and power projection operations. A mindset has taken hold in Navy campaign planning that suggests a reticence to operate surface ships without air supremacy—air supremacy that is assumed to be established and

maintained by the carrier air wing. This approach is necessarily limiting, and reinforces the unimaginative, aggregated CSG formations that present so little a challenge to a peer competitor's targeting complex. The Navy has been allocating considerable resources for over thirty years to producing the world's most sophisticated air dominance combat system, the AEGIS weapon system, and it is currently resident in over eighty cruisers and destroyers. Early in the next decade, the SPY 6 radar—also know as the Air and Missile Defense Radar—will join the fleet on the first Flight III DDG. The power of these air dominance systems must be relied upon to give surface action groups some measure of disaggregation from the air wing, in order to hold a greater number of adversary targets at risk. This does not mean that the surface force should steam blindly into the teeth of the A2AD architecture, but it does mean that in those battlespace volumes where we are able to assume additional risk, surface ships should be tasked with operations that support further roll-up of adversary capability.

Priority Recommendations

The Navy's plan to "upgun" the LCS to the FF is a great first move, but why stop there? Steadily and opportunistically, the Navy must regain its ability to impose sea control with its surface forces. The Chairman of this subcommittee has written about our Surface Force being "outsticked" by Peoples' Liberation Army Navy (PLAN) surface vessels with long range surface to surface anti-ship cruise missiles, and he was correct in this assertion. We must address this asymmetry and ensure that we reverse course and begin building every surface combatant with an effective long range surface to surface missile system, even as the DDG's built without them since 1999 are back-fitted with alacrity.

In the realm of land attack, a weapon with ranges in-between the DDG 1000's Advanced Gun System range of 65 miles and the 1000 mile range of the TLAM should be fielded. An affordable, land attack weapon in the 400-500 mile range should be studied and war-gamed, and it should be compatible with existing launching systems.

As my colleague Bryan Clark has written, surface forces actually hunting down and killing submarines may not be as efficient as using surface forces to ward off submarines from lucrative, high value targets. The Surface Force currently fields the sophisticated AN/SQR-89A(V)15 Anti-Submarine Warfare processing system with the Multi-Function Towed Array (MFTA), a combination that provides detection and tracking of modern, quiet submarines scores of miles from the ship. The submarine may however, be aware of the ship's presence, and submarines are increasingly fitted with long range anti-ship cruise missiles. The surface force should consider developing

a standoff weapon that can be fired at the extended detection ranges offered by its sensitive sonar systems. This weapon, perhaps a rocket assisted depth bomb or even a rocket assisted torpedo, would almost instantaneously put the adversary submarine on the defensive, rather than giving it time to get off its own attack on the U.S. surface ship.

A more disaggregated Surface Force operating in a wartime environment against a near-peer will almost certainly operate in a satellite and network denied environment, which would likely cut these units off from the ISR provided by the air wing, land-based UAV's and the P-8. The Surface Force must develop the capability to launch and recover Medium Altitude Long Endurance UAV's to provide organic Surface Action Group ISR, communications relay, and aerial layer networking in the absence of larger warfighting networks.

Finally, the Navy must actively experiment and war-game in order to evaluate the effectiveness and logistical sustainability of a more disaggregated force. The current aggregated force is only tenuously supported by the Navy's logistics ship inventory, and any large scale disaggregation will stress this under-resourced but critical capability.

Conclusion

A more powerful, numerous, and disaggregated surface force fielding new and improved weapons and sensors will increase the targeting complexity of potential adversaries, dilute their available ISR assets, and diminish their constructive attack density against any single target. Such a move by the Navy would—on a relatively economical basis—extend surface force effectiveness across the span of naval functions, from presence, to deterrence, to warfighting.

Thank you.

Bryan G. McGrath

CDR USN (ret.)
Cleared: TS/SI

WORK HISTORY

Managing Director, The FerryBridge Group LLC (2013-Present)

- *Founder of an independent consultancy focusing on National Security issues, Maritime Strategy, and Defense Technology development.*

Adjunct Faculty, Naval War College (2014-Present)

- *Adjunct Professor of Joint Maritime Studies*

Director of Consulting, Studies and Analysis, Delex Systems, Inc, Herndon, VA (2009-2013)

- *Founding Director of a consultancy focusing on Naval and National Security issues*

Manager, Strategic Planning, Northrop Grumman Marine Systems, Washington, DC (2008-9)

- *Primary Strategic Planner for a $500M line of business in commercial energy and defense.*

Director, Navy Strategic Actions Group. Washington DC (2006-8)

- *Senior Advisor to the uniformed leader of the US Navy (and member of the Joint Chiefs of Staff); responsible for formulating and implementing global strategy for the US Navy*

Commanding Officer, USS BULKELEY. Norfolk, VA (2004-2006)

- *CEO level position directing the activities of a $1 billion warship and crew of 320*
- *Air and Missile Defense Commander for Commander, IWO JIMA Expeditionary Strike Group*

Chief of Interoperability, Joint Staff, Washington DC (2001-2004)

- *Director level position coordinating missile defense oriented acquisition programs of the US Armed Services*

Executive Officer, USS PRINCETON. San Diego, CA (1999-2001)

- *COO level position managing the activities of a $1 billion warship and crew of 410*

Special Assistant to the Chief of Naval Operations. Washington DC (1997-1999)

- *Director level position as Communications Director and Speechwriter to the uniformed leader of the US Navy (and member of the Joint Chiefs of Staff)*

Junior Officer Naval Service (1987-1997)

RELEVANT EXPERIENCE

Chief Navy Strategist (2006/7)

- **Key Contribution.** Led the Washington based team of USN, USMC, and USCG officers who developed the nation's current Maritime Strategy "A Cooperative Strategy for 21st Century Seapower", and served as its primary author.
- **Managing Complexity.** Led a team of nearly 200 senior military officers, academics, and government officials in developing the United States Maritime Strategy, the plan for investing nearly $120 billion dollars annually for the next ten years.
    - Hand-picked by Navy leadership to manage this first comprehensive strategy development effort in 20 years.
- **Public Speaker.** Created and executed an extensive national advocacy and outreach program in support of the development of the National Maritime Strategy, including symposia, newspaper editorials, targeted media, and Congressional liaison.
- **Foresight.** Coordinated an in-depth alternative futures and strategic environment assessment process to support the development of the Maritime Strategy, creating a visionary look at the major trends in globalization, trade, finance, technology and labor now used as the standard for Department of Defense planning.

Command at Sea (2004-2006)

- **Proven Leader.** Received the 2006 "Zumwalt Award for Inspirational Leadership" from the Surface Navy Association.
- **Efficient.** In command of USS BULKELEY, managed over $20 million in resources with recognition for operating fiscal efficiency. Earned 2006 USS ARIZONA Trophy for "most combat ready ship" in the Navy
- **Operational.** Served as the Air and Missile Defense Commander for the IWO JIMA Expeditionary Strike Group, responsible for the seamless integration of the Strike Group into existing Joint Air Defense Networks and the creation of such networks where none previously existed.
- **Organizational Improvement.** Re-organized the management team in USS BULKELEY to reflect functional areas related to combat operations, rather than historic administrative alignment. This innovation created increased communication among the stake-holders and ultimately contributed to the ship's recognition as the most combat ready ship in the Navy.
- **Process Improvement.** Reduced maintenance and repair costs in USS BULKELEY by implementing an in-depth analysis of maintenance request procedures, resulting in 10% faster turn-around on high priority repairs with 50% fewer requests rejected for errors. Maintenance costs were maintained at 80% of the class average throughout command tenure.

Joint Staff Officer (2001-2004)

- **International Expertise.** Experience working with European, Middle Eastern, Asian and Latin American partners. Served as the primary Joint Staff representative to the international data link community, with deep expertise in Link 16, CEC and other missile defense oriented information and weapon systems.
    - Dynamic leadership and emphasis on personal excellence resulted in a 20% increase in retention of key Sailors and a 75% increase in personnel promotion rates.
- **Skilled Negotiator.** Excelled as primary agent of the Joint Chiefs of Staff for oversight of weapon system interoperability. Aided defense acquisition process by coordinating 25 separate programs (totaling over $15 billion) in implementing higher levels of Joint interoperability, resulting in greater combat efficiency at lower total cost to the taxpayer.

EDUCATION

MA, Political Science, *The Catholic University of America*, 1999
BA, History, *University of Virginia*, 1987
Navy Fellow, *Massachusetts Institute of Technology Foreign Policy Seminar XXI*, 2007
Graduate, *Naval War College*, 1999 (JPME Phase I)
JPME Phase II (2006)

MISCELLANEOUS

Adjunct Fellow, Hudson Institute and Assistant Director of the Hudson Center for American Seapower (2013-Present)
Navy Policy Team Lead, Romney for President (2011-2012)

DISCLOSURE FORM FOR WITNESSES
COMMITTEE ON ARMED SERVICES
U.S. HOUSE OF REPRESENTATIVES

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(5), of the Rules of the U.S. House of Representatives for the 114th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants), or contracts or payments originating with a foreign government, received during the current and two previous calendar years either by the witness or by an entity represented by the witness and related to the subject matter of the hearing. This form is intended to assist witnesses appearing before the House Committee on Armed Services in complying with the House rule. Please note that a copy of these statements, with appropriate redactions to protect the witness's personal privacy (including home address and phone number) will be made publicly available in electronic form not later than one day after the witness's appearance before the committee. Witnesses may list additional grants, contracts, or payments on additional sheets, if necessary.

Witness name: Bryan McGrath

Capacity in which appearing: (check one)

(●) Individual

( ) Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: _____

Federal Contract or Grant Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) or grants (including subgrants) with the federal government, please provide the following information:

2015

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
N00178-04-D-4146	USN (OPNAV N96)	$70K	Strategic Comms and Planning
N00189-12-D-0024	USN (COMNAVSURFOR)	$50K	Strategic Comms and Planning
N00124-14-P-00001	USN (Naval War College)	$15K	Professor, Distance Education

2014

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
N00178-04-4148	USN(OPNAV N96)	$70K	Strategic Comms and Planning

2013

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
N00178-04-D-4148	USN (OPNAV N96)	$6K	Strategic Comms and Planning

Foreign Government Contract or Payment Information: If you or the entity you represent before the Committee on Armed Services has contracts or payments originating from a foreign government, please provide the following information:

2015

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment
NA			

2014

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment
NA			

2013

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment
NA			

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