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Featured Speakers:

THE HONORABLE RAY MABUS
Secretary of Navy
U.S. Department of Defense

ADMIRAL JOHN M. RICHARDSON
Chief of Naval Operations
U.S. Navy

GENERAL ROBERT B. NELLER
Commandant of the Marine Corps
U.S. Marine Corps

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P R O C E E D I N G S

MR. O'HANLON: Good morning, everyone. Welcome to Brookings. I'm Mike O'Hanlon with the Foreign Policy Program, and just thrilled to see you all today and to have Secretary of the Navy, Ray Mabus, the CNO, Admiral John Richardson, and the Commandant of the Marine Corps, General Robert Neller with us today in an all Navy all the time leadership event, unparalleled certainly in our history, and a special pleasure for me.

So, we've got an hour, and what we're going to do is dispense with opening remarks and speeches, because we want to be efficient and include you, certainly, in the second half of the discussion. We're going to begin after I say a couple more words in appreciation for the gentlemen and ask you to join me in welcoming them in just a second.

We're going to begin with my asking two broad sets of questions, which I think are a good way to frame an event like this. We're lucky that we're having this event before the congressional hearing process, because we're not trying to re-create that, of course, and we're not going to focus primarily on the 2017 budget. So, all of those of you who wanted that, well, good luck getting your question in later on that, but I'm not going to do that.

I'm going to talk more about the vision of the Department of the Navy, including the Navy and the Marine Corps, of course, and also, broad technical issues and where these gentlemen want to take the Navy and Marine Corps as a function of changes in geopolitics, but especially, changes in technology and in the opportunities they see for their services.

So, we'll do the Asia-Pacific rebalance, because now, we are five years into that; that major initiative of President Obama. Secretary Mabus has been part of it

the whole time. And of course, one feature out of this whole concept of the rebalance is that the Navy is shifting 60 percent of its total assets towards that half of the world by 2020. So, we're sort of at the halfway point in that process, so it's a good moment to take stock.

As I promised, though, let me first say a couple more words of appreciation for the three remarkable Americans we've got here on stage today. Secretary Mabus has a lot of fantastic titles associated with his name. He's a Harvard Law School grad, so he's esquire, but he's also governor, having been the governor of Mississippi in the late '80s and early '90s.

He's Mr. Ambassador, having been the U.S. envoy to Saudi Arabia during the Clinton administration, and he's now, as the 75th secretary of the Navy, the longest serving person to hold that position since World War I, and I think the longest serving appointee at the Pentagon in the Obama administration, as well.

So, a remarkable set of accomplishments, and his initiatives and his priorities as secretary have included everything from, first and foremost, the welfare of the men and women of the Navy and their families, but also, clearly, a number of other important issues; getting the Navy's size back towards 300 ships and emphasizing green technology and renewables as an intrinsic part of the Navy's future technology, along with the other things we'll discuss.

Admiral Richardson, a very young man, I like to say, because he graduated from college the same year I did. He went to Annapolis, and is a physicist and an engineer by background in that period of his life; spent a lot of his career in submarines; attack submarines, but also ballistic missile submarines; the Atlantic fleet, but also, some responsibilities at times, with the Pacific fleet.

And of course, raised a lot of eyebrows with his appointment, because

he was the director of Naval Nuclear Propulsion previously to this, which has often been a job that the Navy wanted to put its best at and keep them there, given the importance of that mission, but they just couldn't resist when they realized they needed a new CNO, pulling this gentleman out and asking him to run the entire Navy, which he's been doing now since last year.

And likewise, General Neller has been in his position relatively recent, as well, a relatively short time, so far. He too, became the leader of his service last year. He is the 37th commandant of the Marine Corps. He was a University of Virginia grad, and then, went to officer candidate school, and many of the other infantry schools associated with the U.S. Marine Corps.

He's had positions of command in all three Marine Corps divisions, the first, second and third, and served in Iraq during some of the most difficult periods of the fight in the '05, '07 period of time, and more recently, in addition to many of their other jobs, General Neller has been the president of the Marine Corps University, so very comfortable in an academic setting, as well.

So, as I said, we are just very fortunate to have them all here today, and please join me in welcoming them to Brookings. (Applause) So, I've already taken a lot of time, so let me now be brief and ask the secretary of the Navy if you could comment on how you take stock of the Asia-Pacific rebalance, as you're now in your eighth year at the Pentagon, but also, the rebalance itself is sort of five years old and more than halfway to that 2020 target.

SECRETARY MABUS: You can look at this in a number of different ways. These two great officers who are up here with me are far better qualified in terms of what assets we're moving, what people we're moving. I mean, some examples, a couple more ballistic missile capable destroyers to be home forwarded in Japan, another

attack submarine into Guam, a rotational Marine presence in Darwin, Australia. And those are important things.

But I think two broad issues is the way I'll approach it. Number one: We are moving 60 percent of our fleet to the Asia-Pacific, which in itself is important. We've always had about 54, 55 percent of it there. But I think the more important thing is, it's going to be a much larger fleet.

So, you're going to have 60 percent more ships in the Indio-Pacific region, and the numbers I'll give you. On 9/11/2001, the U.S. Navy had 316 ships. Seven years later, seven fiscal years later, we were down to 278 ships. During those seven years, the Navy put 41 ships under contract. Now, that wasn't enough to keep the fleet from continuing to decline, and it wasn't enough to keep our industrial base, our shipyards healthy and in business.

I've now been there for seven fiscal years. During that time, we have put 84 ships under contract with a smaller top line. We're going to grow the fleet. The fleet will be at 300 ships by 2019; it'll be at 306 by 2020, and it'll be 308, which is our four structure assessed need by 2021. And it goes to what I and a lot of people have been talking about. The size of the fleet that you're going to have depends on decisions made a decade before.

And so, what we're talking about now and going forward is what is the fleet going to look like past the mid-2020s, because we're there for this administration. We built all the ships we're going to build in this administration. They're under contract. They've been authorized. They've been appropriated, and that's at 84 ships. But to have 60 percent of a 308 ship Navy instead of 60 percent of a 278 ship Navy gives you far more capability and far more capacity from the Pacific.

A second thing is, I spent a lot of time out seeing sailors and Marines,

and out visiting with our partners and our allies around the world, and particularly in the Pacific. In fact, I'm right at 1.2 million air miles now in this job, 144 different countries and territories. And the person, the leadership you meet with in the Pacific, in the Asia-Pacific region, their questions are always the same. Are you serious? Are you going to be here? And the visible symbol of that are those big gray hulls on the horizon, the U.S. Navy, the presence that we give.

And one head of government said, not too long after the president announced the rebalance to the Pacific, I asked him, so what was the reaction in the region? And he gave a great answer. He said, everyone noticed, most agreed, and a few of us were even willing to say so (Laughter).

And so, I think that it's not just militarily rebalancing. We've always been a Pacific power. The U.S. Navy has been a Pacific force for 70 years. In fact, you can make a great argument that Asia is doing as well economically as it is because of the U.S. Navy, because we kept the ceilings open for everybody for seven decades now. But the visible symbols of that rebalance, the answer to the question, are you serious about this, the answer to the question, are you going to be here, is this a passing fancy, or are you going to be here are those Naval assets and are those sailors and Marines that come with them.

MR. O'HANLON: That's a great answer. Thank you. That's very helpful. And now, Admiral Richardson and General Neller, I wanted to ask if you wanted to add anything to that, including on the issue of military to military exchanges with the Chinese or any other dimensions, and obviously, in response or in the aftermath of the Pacific commander's comments this week. Admiral Harris certainly got a lot of attention with what he was saying.

ADMIRAL RICHARDSON: Right. So first, you know, I'd just like to

double down on everything the secretary said. I couldn't agree with all of that more, particularly the fact that the military response to the rebalance is part of a whole government response. And so, as we think about this, you know, the role of the Navy is to certainly grant security, assurance, deterrence, but it's in the interest of protecting and guaranteeing America's prosperity, which has an awful lot to do with the Pacific.

And so, things like the Trans-Pacific partnership, those sorts of things are as important and part of this rebalance as well. Within the security part and within the Navy, the secretary outlined you know, very clearly, that we're moving the Navy, and we're completely on track with that plan. You know, we're on schedule to get 60 percent by 2020.

But it's not just numbers. You know, the secretary has been terrific about increasing the size of the Navy, and so, 60 percent of a bigger number is a bigger number. But it's also capability. So you know, our highest end capability is moving out there, as well. So, when you're talking about advanced ballistic missile defense, advanced submarines, when the joint strike fighter starts to deploy, it will deploy their first. The Zumwalt will deploy to the Pacific first, you know, as it comes alive.

And so, all of those sorts of things in terms of not only quantity, but quality, are part of this. And then, there's an intellectual rebalance, if you will. And you can kind of roll your eyes if you're skeptical about that, but in terms of you know, the generating a cadre of Pacific experts, even experts at the various nations in the region, the Navy's war-gaming and all those sorts of things that give us a greater understanding about operating in the Pacific, all of that has also, you know, really been part of this rebalance, as well.

Just as the secretary talks to his counterparts, I talk to mine when I'm out there. I just came back from the India fleet review, where there were you know, 50 heads

of Navy there, 75 ships for the fleet review, and I had a chance to talk to a lot of my counterparts throughout the Indo-Pacific region. And it's just as the secretary said, you know, they are ready to participate. In fact, you know, I'm always willing to do more to help strengthen regional security architectures, you know, with us as a partner or just with us helping in any way we can.

And as I sort of pushed those, I found out I was pushing on an open door. I mean, it was a complete willingness to continue to do more to cooperate, collaborate, operate together in just about every sense. So, I think we're really on track to do that.

MR. O'HANLON: Let me follow up very briefly with one more question before going to the commandant. I think there's been some recent discussion, I just wanted to see if you wanted to comment, recognizing this is a hard topic to discuss in public, about the adequacy of the attack submarine fleet for the Pacific theatre in particular.

ADMIRAL RICHARDSON: Mm hmm.

MR. O'HANLON: And obviously, the way in which we deploy, where we deploy, this is going to be sensitive or classified. But is there any way you can help us understand how we should be thinking in broad terms about whether the attack submarine fleet in particular, is big enough.

GENERAL NELLER: Right. Well you know, the current validated number is for 48. That number really is based on analysis from 2006, and so one of the things -- you know, the secretary mentioned four structure and how we assess the right size. You know, we're on track to meet that number of 308 ships, but even that assessment is a little bit old. The last time we did that, you know, we really didn't have to account for a resurgent Russia. We really didn't have to account for ISIL.

And so, we're starting again. The strategic landscape has changed sufficiently that we have to constantly reassess. It's also been pretty well known that even with that 48 requirement, you know, we're going to dip below that, just as the Los Angeles class submarines come out of the inventory faster than the Virginia class is coming in. And so, managing our way through that trough, if you will, has been a topic that we've been watching very closely and doing everything we can to mitigate that.

I think all of that, as Admiral Harris and General Breedlove have both mentioned, you know, that's becoming a more urgent situation. And so, we are examining everything that we can, working closely with the industrial base, with the leadership in the department and in Congress to see that we're not missing a trick to mitigate that trough.

SECRETARY MABUS: And --

MR. O'HANLON: Please.

SECRETARY MABUS: -- I mean, this just goes back to the point. It takes a long time to build a fleet. And the reason we're dealing with the number of attack submarines we have today is because of decisions made 6, 8, mainly 10, 12, 15 years ago. We're building right now, two Virginias a year, which is about all the industrial base can handle.

But in the past, we didn't build two a year. There were years we built one, and it would go up and down between one and two. Those don't have any immediate impact to the fleet, but to CNO's point, you look out 10 years and you're looking at a dip in the attack submarines. And you can mitigate it, but you can never make it up, because if you miss a year building a ship, it's gone, because of the industrial base and because of the capacity there. You're just going to have to figure out other ways to do things, and that's why the decisions we're making today are going to be so

important in the 2030s and 2040s.

MR. O'HANLON: General Neller, if I could turn to you on the same question of the Asia-Pacific, and whatever thoughts you have. But also, obviously, as the secretary noted, you've got specific interests, and now Marines in Australia. I don't want to drag you into Okinawa politics too much, but if you want to say anything about the --

GENERAL NELLER: Thank you very much (Laughter).

MR. O'HANLON: But if you have any Plan Bs, which is a word that's obviously making its way around Washington this week in regard to Syria, but if the Okinawa thing doesn't work, is that going to fundamentally jeopardize the Marine commitment to the Asia-Pacific? So, anything you want to say on that subject, please.

GENERAL NELLER: Well, I think it's important. First of all, 71 years ago today, there were 80,000 Marines ashore on an island called Iwo Jima, and there were 400 ships off the coast as part of the large fleet. This Monday would have been 71 years when the flag was raised over Suribachi.

So, I find it interesting that as you -- and you want to learn something new, read an old book. I recommend to you *U.S. Marines and Amphibious Warfare* by Isely and Crowl, which talks about the naval campaigns in the Pacific. And the CNO and I, we committed to each other as you know, Marines and sailors as part of that Naval force, as the secretary mentioned, out there, forward posture, providing presence, assuring our allies, deterring our adversaries, doing the business of the nation.

You know, historically, the modern Marine Corps is a Pacific force. I mean, I would consider you know, that since 2003 to '11 was kind of an anomaly in our history. So for us, the rebalancing is -- well, we just went back to where we were. We re-established our presence. You know, today, there's 22,000 Marines west of the international dateline in the Pacific. (Audio dropout) third Marine expeditionary force is

out there. In fact, 31st from our next (Inaudible) unit is out conducting training in the Pacific.

So for us, it's you know, back to the future. I mean, I started in the Pacific in 1976. I'm much older (Laughter). You're supposed to say, you don't look that old, General. (Laughter)

SECRETARY MABUS: You're younger than I am. (Laughter)

GENERAL NELLER: Well, you look better than I do, sir (Laughter).

ADMIRAL RICHARDSON: They're very handsome men.

GENERAL NELLER: You're, they're very handsome men. But, so for us, you know, for the period 2003 to 2011, the normal force rotation we had on Okinawa and in some cases, aviation in Iwakuni was not there. There was nobody there. And so, we've re-established that force posture, and we're training and exercising.

And the same thing that the secretary and the CNO said. And we go out meeting with our counterparts, whether they be foreign naval infantry. I mean, there's a lot of Marine Corps out there -- the Filipino Marine Corps, the Rocks, the Japanese are building an amphibious brigade. In fact, there's amphibious soldiers at Camp Pendleton right now, training on amphibious operations on U.S. Navy ships.

So, we'll continue to look at this. But you know, the dilemma is, you know, there's other requirements around the world, whether it's General Breedlove and EUCOM, it's theatre security cooperation, build partner capacity in Africa. It's the Middle East. Marines are part of the force that's supporting Operation Inherent Resolve in Iraq. Marine expeditionary units just did a large amphibious exercise in Kuwait.

So, we're part of the fleet. We operate as part of the fleet. We're part of the naval force. We're best employed coming from the sea, using the sea as maneuver space, and it's good to be back in the Pacific, and there is a lot to do.

MR. O'HANLON: I think I'm going to move along now to the longer-term vision, and especially the subject of technology. Obviously, we're taking two big topics out of 5 or 10 that we could have in sort of ways to frame the future discussion of the future of the United States Navy and Marine Corps.

So, I'm just going to put the technology question on the table and just go down the row before turning to all of you with your questions. And the way I'd like to frame this is again, not to get into the 2017 budget details or the immediacy of the next budget decisions, but to think longer term about where the Navy and Marine Corps have to be headed in a world of cyber, a world of robotics and a world of directed energy.

These are three of the technologies that I'm intrigued by, as we think about everything from missile defense to unmanned, underwater vehicles operating off of mother ships and unmanned aircraft that are you know, strike aircraft or refueling aircraft or reconnaissance aircraft -- this full range of topics.

And so, just to make my question a little bit more focused, I guess starting with you, Mr. Secretary, again, is there one of these areas of technologies that you're most concerned about that we haven't quite gotten our arms around yet, either as a Pentagon or as a nation, or just because the technology is so new and you know, in some ways, so threatening, potentially providing opportunity, but also dangers, that you really think we need to put more focus in the future?

SECRETARY MABUS: I'll back up just a second and say that we've got two great edges that we've always had. One is technology. And it's clear, we've had that technological edge for decades now, and we cannot afford to lose it. The others are the people who operate that technology; the sailors and Marines that -- civilians that develop it that come into our force.

And you know, you can have the greatest technology in the world. If you

can't use it -- so, you've got to pay attention both of those. I won't talk about one specific technology, because you've touched on all of them. I mean, the future warfare and Naval warfare is unmanned, whether under, on or above the seas.

It's directed energy, the rail gun, laser weapons, like the one we've got on the Ponce in the Arabian Gulf today, a laser weapon. It's cyber. It's swarm technology. It's the robotics. It's 3-D printing, which will change the logistics of how we do things. And if you can print a weapon that's a one-time use weapon, or you don't have to have high explosives with the rail gun; things like that.

The thing that I think concerns all of us is how long it takes to get those technologies to the warfare; how long it takes to go from lab to the fleet, and how convoluted the acquisition process is. I mean, I took a chart to hearings last year that showed the steps you've got to go through to get an acquisition program through. It looked like a plate of spaghetti. It takes years.

And so, trying to figure out how to do this faster -- and we're doing things like rapid prototyping, which is, before you start a multi-year, multi-billion dollar program of record, you've got a prototype of a system, weapon, whatever, that you've done the initial testing on. You believe the technology works. Get it out to the fleet and see in real world conditions what are the issues, what are the problems.

And so, you succeed quicker or you fail quicker. If it's not going to work, you haven't gone done this long line. Congress helped last year by putting the service chiefs much more in the acquisition process. These are the customers, and they were taken out. They were held accountable when something didn't work, but they weren't included in the optimum requirements of the process, and that's on its way to being fixed.

But I think the question is, regardless of what the technology is, how do we get it there quicker? I mean, you can go example after example. One of the things

on our new carriers, CVN-79, CVN-80, the Kennedy and the Enterprise are coming. We're not going to put the electronics on those until the very end of the shipbuilding process, because if you do that, and it's five years until that carrier deploys, you've got to start over. You've got to rip it all out.

And we're going to more open architecture, more modularity, so that as technology changes, which it does, you don't have to rebuild the entire ship. You don't have to rip out wiring. You just have to change the modules or the servers or whatever the software and whatever the controller is, and not the underlying thing.

MR. O'HANLON: Same question for you, General.

ADMIRAL RICHARDSON: Yeah, again, just to echo on top of that, it is about speed. And I recently signed out the Navy's design for maintaining maritime superiority. And if there's one message about the strategic environment we're in, it's that it is moving faster than we are right now. And other people out there, some of our competitors are taking advantage of that faster than we are, as well, so the gaps are closing.

The secretary is exactly right. We never want our team to get into a fair fight. We always want to be outgunning anybody who would want to take us on, and that's becoming harder to do. And so, we're creating rapid prototyping and experimentation capability, working very closely with the department and the Hill to kind of you know, put enough structure there so that there is sufficient oversight.

It's not completely unstructured, but it's not as you know, formally laid out as maybe a traditional program of record would do. So, we can get at this experimentation, fast failure, those things that actually lend competence to systems that go through that process and eventually get fielded.

We're also creating an accelerated capabilities office, and so there's a

speed lane for those programs for which it would apply, so that we can get through some of these wickets. We can take a couple of those strands of spaghetti, put them off to the side and accelerate that forward. I think that the War Fighter is one of our best experimenters, so we get it out of the fleet, into the hands of sailors, and the dialogue that happens between the engineers and the technologists and the operators, everybody on both sides of the equation, are very, very smart, and we can move forward there very quickly.

And then, you know, if you think about the future, to your point, it's going to be unmanned. It's going to be directed energy. There's a lot of engineering that's making that possible. So yeah, I've got the laser part. I've got the rail gun part, but you know, there's an entire power distribution system that has to support that, and some of the advances that have been made in power conditioning and those sorts of things are enabling these things to become possible.

We need to move faster. We need to get out of the skunk works you know, phase more quickly and get it out to the fleet. You know, the future Navy, I think is -- there are some things that I think are undeniably going to be built in for the life of a ship, for instance. You know, speed. That's a tough one to improve after you've built the ship.

But the rest of it will be a host for a capability that will improve right along the technology curves, whether that's Moore's Law or what have you, and you just kind of have enough cooling and power and space to allow those capabilities to improve very quickly, in fact, increasingly quickly in the future.

MR. O'HANLON: Can I follow up with one specific question on where we stand in the offense defense competition with missiles? And it relates to the Asia-Pacific rebalance question earlier, obviously, because of China's growing capabilities, but also,

North Korea's. And it looks to me, as we deploy a lot of pretty impressive hit to kill technology with missile defense, that these are very good systems within certain kinds of threat scenarios.

ADMIRAL RICHARDSON: Right.

MR. O'HANLON: Limited numbers of incoming, primarily, because we're getting better at hit to kill, but the numbers still don't work in the defense's favor, I would argue, at least, in a situation where it takes so much money to build one interceptor.

ADMIRAL RICHARDSON: Right.

MR. O'HANLON: And that's why people talk about directed energy, and so forth. As you look out, you know, 10 and 20 and 30 years, and this is a good question to put to a lifetime submariner, do you think that the surface fleet is going to become more vulnerable, less vulnerable, or it's just too hard to say at this stage in sort of the development of Naval technology?

ADMIRAL RICHARDSON: Yeah, without a doubt, the contest is becoming a lot more complicated as you know, the capability of all of those systems increases. And it's much more than just a missile. Right? There's the entire electromagnetic environment that has to surround that, and then you know, directed energy will be a big part of the future kind of coming down on the cost per round, if you will, as we look to intercepting types of technologies.

But you know, you have to appreciate it, Michael, from the entire what we call, kill chain perspective. Right? And so, if you think about all the things that have to come together to consummate that engagement, we really have to take a cradle to grave approach. Certainly, an intercept type of a thing is sort of -- in the terminal phase of that engagement, we have to start to appreciate that, all the way back at the sensor level. You know, they would get the initial detect and look to confound that chain all the

way through.

MR. O'HANLON: So General Neller, looking now to the future of technology as you see it from a Marine Corps point of view, I'd be curious for your thoughts and your reactions to the same broad question, but also, specifically, on issues like your F35B and trying to keep a survivable air field on Okinawa and wherever else in the region.

To what extent do you think that the offense-defense competition can still allow us to project power as we have, or is -- you know, is China plus the thrust of technological change -- is that going to just sort of push us further away from the Asian mainland as time goes on?

GENERAL NELLER: A lot of this goes to the context, and it goes to the comments by the secretary and the CNO about speed. You know, we made decisions about systems. We made decisions about forced positioning, and then over time, the situation has changed. So, we have to figure out, so now you have a different problem set to solve.

So, on the technology thing, you know, I kind of see it and we kind of see it in two ways. How can I do what I do now better? Then, the really hard question, how can I do what I do now different? Like 3-D printing is like okay, that's going to make things different. I mean, shooting down an airplane, shooting down missiles, okay, can I do it better, you know, if there's a different way to do it. And there might be a different way to do it.

So, two different problems. The F-35 is an example of yeah, there's some things that airplane does better than its predecessors, but the exciting part about it is what can it do different? What's it going to do to change the game? For example, the Argnee -- everybody wants to know where the Argnee is. They want to know where the

carrier is. They want to know where the Argnu is.

And then, the question, well, where are the Ospreys, because now I've got a D-stall airplane that can fly you know, around the world theoretically with a (Inaudible), because a guy can aerially refuel it. And I have reach -- they replaced an airplane that had an unfueled flight radius of about 150 miles. Now, my un-refuel flight radius is 500 miles.

Now, I'm going to put a Gen-5 airplane on there that can hold most of the integrated air defense systems at risk flying off an amphib ship. Nobody ever asked the amphib ship to do stuff like that before. So now, this is different. So, how do we link that? How does that fit in with the carrier strike group? How does the commanding control that's on the amphib ship integrate with the rest of the fleet? So, we're really looking at an entire fleet of network ships, you know, whether from the smallest combatants through the amphibs. So, we're fighting as a naval force.

So, I think the CNO and I are just starting to get into the very basic discussions of that. I mean, it's pretty exciting stuff. And the other things, you know, there's all sorts of things out there. And as far as technology, we've been using robots, but one, you know, robots controlled by a human being -- when does the robot have an autonomous intelligence capability to go find mines?

I worry a lot about mine countermeasures. I mean, mines is a very simple weapon, although some of the mines that are out there are very sophisticated, and they can sense and detect and they can be, you know, put in a kind of a quiet thing. But somebody has got to go find them. So, there's some very simple technologies can keep us at risk.

So, we're trying to figure this all out. We've had a Marine Corps war fighting lab. General Krulak as commandant established a Marine war fighting lab, and

they did a lot of good stuff. And then, they were doing things, but we've kind of re-energized that as our experimentation place, and we're going to take a unit, as I agree with the CNO. And you give it to the Marines. Here's some technology. Here's some simple things to maybe help you do what you do better, and let them go out and play with it and see what it does.

The survivability you mentioned, because of the missiles -- you know, when we did the lay down and the plan, the capabilities that our potential adversaries had didn't exist. So, we need to look at how we're going to harden ourselves, or we need to know where we're going to position ourselves.

You know, ideally, I think you're much more survivable if you're moving on ship, and we much like (sic) to be on ship. So, wherever we end up in the Pacific, you know, we have a requirement for mobility. As we distribute the force, however we end up distributing it, we've got to be able to move it and get it to the fight.

So, all in on increasing the size of the fleet. Part of that is increasing the number of amphibs. Still, we need to work on that, and I think we've got some ideas on how to do that, because it's got to be cost effective. These things are expensive. And we've got to be good stewards of the taxpayers' money and make sure these things come online. But the Naval force has got to have mobility and use the sea as that mobility, and I think there's other things we can do to address some of the capabilities of our adversaries.

MR. O'HANLON: One last quick follow-up and then we'll go to the audience. You mentioned General Krulak and some of the things he began, and I think that was a rough time period, when the Marine Corps became in charge of non-lethal weaponry research. Can you give us any sense -- to me, this looks like an area that we've made some headway, but it's been frustrating.

It's been frustrating that we haven't had more options. I'm not blaming the Marines or anything, I'm just -- the state of technology is such that you know, a lot of these counter-insurgency and counter-terrorism fights, it seems like we're still basically forced to choose between applying lethal force or essentially, not shooting in most settings, in most situations. Is that true? And is that going to change?

GENERAL NELLER: I mean, there is a whole suite of non-lethal weapons that have been used in the battle space. Obviously, you don't want to shoot an innocent. You're out there to protect the innocent and find the bad guy, and you know, make him go away.

There's some capabilities out there that there are some legal issues with it, and you know, that would require a decision. And that kind of goes to -- we talked about cyber. And we have certain capabilities, but you have to have the policies and you've to have the rules of engagement. You've got to have the -- you know, within the law of war, because we're a nation of laws, and we're going to follow the law. Our adversaries, well, they decide whether they're going to do that, and we're going to train our forces to do that.

So, we have capabilities. I think there are certain things, some opportunities, but sometimes it's easy to say this is just too hard, and we're going to -- because we're busy. We've got to focus. We've got to come up with a solution now that's applicable and works. But I take your point.

I think there's room for non-lethal things, particularly for a maritime force, and we haven't not (sic) stopped working on that. The one particular capability has been it's smaller and it's still capable, but there are some shortcomings with it. But we have that office, and we continue to work on those capabilities.

MR. O'HANLON: Thank you very much. Well, let's go to you. I'm going

to take two questions at a time, and if you could, wait for a microphone. But also, if you could pose the question ideally to one of the three. Others may wish to comment, but it would help us if you could focus in. So, we'll start here with two in the second row. I'll take both of those together.

MR. SHOBLE: Thank you. Question for General Neller.

MR. O'HANLON: And please identify yourself. I'm sorry.

MR. SHOBLE: Thank you. Jeff Shoble, *Marine Corps Times.* The Chinese may be militarizing these artificial reefs in the Pacific. At what point does this go from a freedom of navigation issue to a military problem?

MR. O'HANLON: And if you could just hand the microphone here, please.

MS. ECKSTINE: Sure. Meghan Eckstine with *U.S. Naval Institute News.* A question primarily for Secretary Mabus. I was wondering if you could talk a little bit about the future of littoral combat ships, both with the recent decisions you've made on the mine countermeasure package, and also, how future deployments will help get you ready for having four operating out of Singapore?

MR. O'HANLON: Do you want to start? Go ahead, and we'll work down.

GENERAL NELLER: On the land reclamation by the People's Republic of China in the South China Sea, you know, we're paying attention. I mean, Admiral Harris made pretty upfront, open comments about that, that they're establishing a posture. They're militarizing the islands. They've got air defense. They're flying jets down there.

We're going to continue to operate there, because within our rights within the international law, when does it become a military problem? You know, we don't want to pick a fight with anybody, but we're going to maintain our rights of passage through

international waters, and as long as they don't put at risk any of our allies that we have a treaty with, you know, we'll continue to coordinate and work with them. But I'm sure, just like they pay attention to what we do, we're paying very close attention to what they do.

SECRETARY MABUS: Your question is a great example of one of the things we're talking about; trying to get testing while you're deploying, and balancing that against the formal test procedures. There's a huge demand for LCS, soon to be the frigate by the fleet.

And what we're trying to do, because these are new ships and we have six of them now that have been delivered to the Navy, is to battles (sic) -- doing the testing on the ships and on the mission modules, doing the more formal testing back here, while at the same time, getting that capability, getting that platform forward with some of the mission modules.

The mine hunting -- we're pretty much on -- we are on track on the counter-surface, counter-submarine track. On the mine hunting, all of the sensors work. This thing can find mines, it can fix them and it can eliminate them. We are not satisfied with the reliability of the RMMV, Remote Mine Hunting Vehicle. And so, we've got ten of these. We're going to upgrade them to make them more reliable, but it's not a long-term answer.

And what CNO has done, CNO and the assistant secretary, Sean Stackley, for acquisitions, is put together a look at what do we do going forward. And we're going to move to something different. We're going to move first to probably an unmanned surface vehicle, instead of this semi-submersible. And then, we're going to move longer-term to an unmanned underwater vehicle, which is probably where this thing should be.

But it's also a good example of why modularity helps you, because you

don't have to redo the whole platform. And when you run into these things with new technologies, it's not as reliable as it ought to be. Change course. But part of the testing for all of these is to get it out there. You know? Get it out there as quickly as you can and test it in a more realistic environment; not skipping the testing that you have to, the formal testing that you have to do, but as the CNO said, getting it to the fleet and letting those sailors, letting those Marines, who are the people that are going to have to operate it and who are incredibly skilled tell you what the issues are; tell you the fixes that need to be made, or tell you the improvements that need to come.

MR. O'HANLON: Admiral, do you want to comment on either of those questions?

ADMIRAL RICHARDSON: Sure. Yeah, the secretary characterized this very well, and I think in terms of -- there's a lot of good, I think, going forward, and a lot of lessons that we're going to learn. So, if we'd had sort of a rapid prototyping approach earlier in this program, I think we would be in a different place with respect to this tow vehicle that's the semi-submersible. We would have wrung that out a lot faster, and we would have probably gone to a different solution earlier.

As the secretary said, the hard part, the sensor part is working great. And you know, a lot of that feedback came from those sailors that are out there just trying to you know, do everything they can to meet the mission. The other part of going forward is not only the modularity for LCS, but the modularity for any other ship that can be brought to bear, including some of our international partners.

And so, this kind of open architecture type of an approach will make that mission able to be shared with other nations in the region, and I think overall, we'll get a much more comprehensive approach to a really difficult mission, which is finding some small objects in potentially, you know, crazy environments. So, I think we're on the right

track right now.

SECRETARY MABUS: And I do have a tradition that all-hands calls, first question gets the coin.

GENERAL NELLER: (Laughter) There you go. There you go.

MR. O'HANLON: We'll go on the third row here and the second row, and then work back on the following round. I'll take two together again, please.

MS. WIRTHEIM: I'm Mitzi Wirtheim with the naval post graduate school. Admiral Richardson, my question is for you. You've talked about accelerated learning. What is the plan for that in the schoolhouses? What are the kinds of things -- the shifts that need to be made at the academy and at the graduate school, and even in the ROTC programs? Because we've learned a lot about learning, but haven't gotten into most schoolhouses, in my opinion.

MR. O'HANLON: Right. And then we'll take this question here, too, please.

SPEAKER: Hi, Valerie (Inaudible) with *Defense Daily.* My question is also for Admiral Richardson. I was wondering if you could speak a little bit more about the process of rapid prototyping; if that's been submitted anymore, and whether you know what kinds of technologies you'd like to get out of that.

And you've also talked in the past about CBARs and about the importance of getting that to the carrier deck as soon as possible. Is there an area where you might use prototyping or demonstration aircraft in order to do that?

MR. O'HANLON: While the admiral is thinking, I'm actually going to do a little unusual thing. I'm going to take a question that somebody has for General Neller and for Secretary Mabus. So, only raise your hand if you have one for the commandant, please. Over here.

SPEAKER: (Inaudible) with the Hour Magazine. General Neller, you talked about you're more -- survival if you're mobile. The Marine Corps has a problem, particularly in the Pacific being mobile, because of the shortage of GATORs. And you also have your express purpose MAGTAFs you know, in Europe and CENTCOM that you'd like to get on ships.

You know, could you talk about how you're handling the problem? And again, I'll throw in the Australian rotation. They go to a shore. They're kind of locked in. Could you use more GATORs down there for the Australian rotation?

MR. O'HANLON: And is there a question for the secretary in this round? Right here.

SPEAKER: Secretary Mabus, when we talk about the future of technology today in DoD, it's surprising to go an hour without hearing the words offset. If we go back to one of your main focus areas, energy, when I look at energy, it's relatively absent in the offset strategy. How do you see those -- in the offset discussions. How do you see those combining or not?

MR. O'HANLON: Okay. So, why don't we work down the row, please? You go ahead, please.

GENERAL NELLER: Shoot (Laughter).

ADMIRAL RICHARDSON: Do you want me to jump on that? I'll jump in front of you. I've had the most time to think (Laughter).

SECRETARY MABUS: Well, I think energy is and can be a weapon, is and can be a vulnerability. And the way it fits in, and regardless of what you call the strategies, is that we want to take it away as a vulnerability, and we want to take it away as a weapon that can be used against us.

And I'll give you a couple of quick examples. At the height of the fighting

in Afghanistan, we were losing a Marine for every 50 fuel convoys that came in, either killed or wounded. That's way too high a price to pay to get fuel. The Marines have been way out front on making fuel where you are, so Marine companies have these solar panels that are about that big, rollable, put it in your pack. They save the Marine company about 700 pounds of batteries, which makes them lighter, more maneuverable, don't have to be resupplied.

We've got seal teams in the field that are pretty close to net zero in terms of energy and water, because they use some of these alternative energies to purify water, so they don't have to be resupplied nearly as much. And the last example I'll give you is a more geopolitical example. In Singapore, there's an oil refinery, that when our ships are in that part of the world, some of our fuel comes from, it's owned by China. Right down the road is a biofuel plant owned by a Finnish company. I don't want to be dependent on one source of fuel, one source of energy that may not be available.

MR. O'HANLON: Admiral?

ADMIRAL RICHARDSON: To Mitzi's question about learning first, and it really you know, is kind of the classic answer. It depends. It depends on what do you want to learn. And I think that many of the examples that you talked about in the academies and in the colleges, you know, they're wrestling with a lot of things.

But what I want most out of the graduates of our programs, the Naval Academy and our ROTC programs is young officers who know how to think; who know how to frame a problem and take creative solutions to solving that problem, and then, who know how to lead, and so, can lead a small team in the execution of that solution. And so, that's the most important thing for that part of our education challenge.

There's a huge learning part of our business, teaching part of our business that you know, every one of those recruits that comes through boot camp now

has to go to a specialist job, and there's a tremendous amount of training there. I will tell you, just earlier this week, I was down in Norfolk, and we had an all-hands call with about 1,200 sailors.

And you know, I've learned that just like we did today, Michael, the best thing is to open it up to questions. And just like there, the media is present just like it is here. And so it's kind of a raw moment, and you're sort of vulnerable. And this one sailor got up, a young information technician, and said, hey, you know, I just came through one of these digital tutor courses, and I want to know what your plan is going forward for these digital tutors.

I said okay, I've got a question for you. How did it go? And he said, well, I took a three week school, and I basically learned more in that three weeks than I'd learned in two years of college about the business I was doing. And we've run some experiments in that regard, where we've done sort of a classroom that was taught through digital tutor techniques and have compared that to a traditional classroom of students.

The classrooms that are taught by these digital tutors are doing it in a small fraction of the time. They are crushing their competition in the traditional schools. In fact, they are crushing the competition -- they can outperform the faculty in those traditional schools, and they can outperform an experienced fleet operator. And so, to your point, we've just done a tremendous amount of learning in terms of how to learn and applying those techniques, both just techniques and also technologies is going to get us through schools. And we've captured all of that in a program we called Ready Relevant Learning.

Then there is, I think, at the back end of a career, there is, how do we teach strategy? How do we now -- you know, we've taught young leaders how to think.

We've taught young operators how to operate their gear. At the other end of the spectrum now, we have to think at the operational strategic level, and how do we develop that cadre of professionals? And that's a much different challenge. The techniques are you know, much more personnel intensive, experience intensive.

And so really, to get at all of that, you know, it kind of depends on what you want to be teaching. What do you want to learn? Finally, you know, we talk about high velocity learning in this design quite a bit, and my uncertainty -- my you know, anxiety right now, I guess, is that as we get started on this plan, everybody out there is on board with it. We've got tremendous buy-in.

And everybody is kind of checking their mail every day for the high velocity learning kit to arrive. And it's like okay, I'll just open this thing up and I'll get started. It's really sort of how do we, you know, have an insatiable curiosity to get better. And that is scalable. You know? We're doing it at the Navy level, but you can go all the way down to the division or work center level and just figure out hey, you know, I thought I was going to do this. How can I do it better the next time? And then, how do I share those lessons, you know, across the fleet?

Those are the sorts of challenges that we've got to be you know, charging into. So, there's kind of our formal teaching business, but there is this sort of operational learning out there, as well, that is a big part of the solution going forward.

MR. O'HANLON: General.

GENERAL NELLER: You had another question, John.

MR. O'HANLON: Oh, right.

ADMIRAL RICHARDSON: I'm going to give you a chance.

(Simultaneous discussion)

GENERAL NELLER: On the part of the Navy ship register, there's 30

amphib ships today. Today, there's three amphibious ready group marine expeditionary units underway; 26 in CENTCOM. The 13th (Inaudible) just left Hawaii to relieve them, and the 31st MEU, which is based on a four ship R got (Inaudible). They're off getting their certification.

We have two special first MAGTAFs, and partly, because we put them because there were requirements that could have been met, in some cases, by having amphib ship availability; maybe not three, but two or one. So, we know we need more ships. We're going to get to 34 by 2024. Eventually, the long-term ship building plan, we'll get to 38. That's kind of the bottom line, 38.

That gives you two Marine Expeditionary Brigades, forcible entry capability. I think the demand, if the combatant, commands demand probably exceeds or gets close to 50 ships. So, what are we going to do, because I don't think we can afford 50 ships? I mean, I'm just going to press to get to 34. Thirty-eight will be -- it's out there, but it's still the validated requirement.

So, we have to look at other ways. We have mobile landing platforms. There's use of commercial hulled ships. Being more creative in alternate platforms, they just did an exercise, part of this amphibious exercise in Kuwait. They used a high speed vessel, and they flew Marines off that and did a non-combatant evacuation.

So, there's other platforms out there, and I think we have to be -- we, the Marines, we the Navy, we've got to be a little bit more creative and flexible in our mind on how we use these other platforms. And it's easy -- I think you've got to say, look, this is all right. And we're still going to build these amphibious ships, because you're always going to have ships in the yard. I keep a piece of paper with me that tells me that -- and now I'm getting to get it (sic) sent to the CNO so I can remind him every day how many amphibious ships are being wrenched on, because they need to be wrenched on.

Because like every other ship, you can't just -- you know, it's not a car. You don't drive this thing until it breaks. You've got to get it in to keep it from breaking. So, we've got to improve the readiness overall of the fleet, and we've got to build new. And we've had to be a little bit more creative on how we put Marines aboard ships to take advantage of the sea as maneuver space.

Because I mean truthfully, a lot of the stuff we do on a day-to-day basis, whether it's -- if there's no direct threat to that platform, you know, you don't necessarily need amphib ship. An amphib ship is probably the optimal platform to do it, because it gives you all the things you want. You've got medical. You've got a flight deck. You've got command and control. You've got habitability. You've got survivability. You've got fire power. And then, the Marines provide those other capabilities.

So, we're going to continue to work on that. We're pressing the MLP3. The Lewis B. Puller's down in Norfolk doing trials. I would like very much for that ship to be based in the Med. Right now, that's not the plan, because we're going to continue to work on that. And the CO-COMs, but AFRICOM and EUCOM have written a letter saying hey, we'd like to have this capability in the Med to service West Africa in the Med, because there's stuff going on there that we need to be able to move around, and we don't want to be tied to a land base.

MR. O'HANLON: Admiral, I guess last word to you --

ADMIRAL RICHARDSON: Right.

MR. O'HANLON: -- for the last question.

ADMIRAL RICHARDSON: Sure. You know, before I answer your question, and I will get to it, I just wanted to sort of leverage of General Neller's comment here. One of the most exciting areas -- we talk about sort of examining fleet design and this design -- and design for maintaining maritime superiority.

What's sort of one way to leap ahead, do things differently, is to look at how we combine forces in creative ways. And so you know, some of these other lift alternatives, they're never going to replace the amphibs, but they certainly can supplement them in very meaningful ways. Right? So, we have to be open to the possibilities.

The general mentioned, hey, we're going to bring this fifth generation aircraft on amphibs right now, and that is a game changer, not only for what's going to happen in the air, but what must happen on that amphib. And so, what sort of combat system and defensive systems does it need to make sure that not only the aircraft, but the entire ARG is brought into that fifth generation.

How can we experiment with different combinations of ships with you know, maybe an amphib, a big deck amphib, some cruisers and destroyers to bring about all of these new combinations, which is, I think, a way to also leap forward in very creative ways, give any enemy a tremendous amount to think about. And so, we're committed. I always say there's no daylight between General Neller and I. It's absolutely true; we're bound in creativity.

I tell my team, hey, we've got to be our own worst critics. We've got to think about every day, how we can be better and how we can make the Navy better. And General Neller comes down the hall every day and tells me how I can make the Navy better, too (Laughter). So, we're completely united in that.

(Simultaneous discussion)

GENERAL NELLER: Just being a good friend.

SECRETARY MABUS: Before you get to your last question, I mean, my office is in between these two (Laughter). So, they explain to me how we can make the Navy and the Marine Corps better virtually every day.

But to General Neller's point and to the CNO's point, we've got new types of ships coming. We've got the ship that -- the Lewis B. Puller. That's expeditionary sea based, and it's an incredible capability. It carries a lot of stuff and it's got a flight deck. We need one in the Med, and we need one for Africa and for Europe.

We're building two more, because we need one in other parts of the world, too. And the expeditionary fast transport that the general talked about in the amphibious thing, they're not -- they don't take the place of amphibs, but they can supplement amphibs to a great extent. And just as we need to have presence with cruisers and amphibs and carriers around the world, we need it with this kind of capability, too.

And so, we built two of the ones without flight decks. We're building three, the Lewis B. Puller being the first one, and I just named the last one, the Woody Williams for the last surviving medal of honor recipient from that battle that General Neller talked about Iwo Jima 71 years ago.

ADMIRAL RICHARDSON: I'll just go to the unmanned aircraft piece. Finally, we'll get back to that. A lot of time to think about it. And I like this way forward for carrier-based unmanned aircraft to be sort of the poster child for how we should do acquisition. And so, we're going to get something on deck as soon as we can that will fulfill a valid need tanking an ISR on that aircraft carrier and for that air wing.

And you know what? We're going to learn a tremendous amount of other lessons about how to integrate unmanned into the carrier air wing, and into some of these amphibious ready group types of operations, as well. And so, we need to get something out there and start learning. Right? There's a tremendous amount to be discovered.

Nothing that we right now is going to preclude transitioning to a high end

type of a capability. We're going to continue to watch technologies mature. We're going to do a lot of partnering with folks that are working with technologies, and as they mature, as the technology affordability comes in, we're going to migrate those to a marinised application, as well. And so, this is kind of, I think, more like what acquisition should be done.

We're not going to wait and shoot the long shot, you know, from half court, waiting for -- you know, trying to predict what's going to happen 25 years from now. We're going to get the thing on deck. We're going to start learning fast, and we're going to you know, be able to respond much more adroitly to whatever security challenges come down the pike. So, I look forward to this being -- you know, we're going to look back on this and say, this was one of those programs that helped us into a new regime in terms of acquisition.

GENERAL NELLER: On this technology, I think you know, we can't be afraid of failing. Okay? Not everything is going to work. So, that's kind of -- that's why, oh, I don't want to do this. And nobody wants to be in charge of a program that doesn't work. And so it takes a long time.

You know, I'm trying to convey, and I know the CNO feels the same way -- it's like, hey, look, we've got to go faster. Well, it's not ready. Okay, but we don't have time to wait. Let's just go play with it, because we know giving to Marines and sailors, they all -- because they're so focused and they're so smart and so mission oriented, they'll come up with something, or they'll come back and say, who thought of this (Laughter)? We'll be like, well, the CNO did (Laughter). Right?

And he'll say the commandant thought of it. And then, they'll go, well this was the worst idea I've ever heard of (Laughter). And we'll go, okay, well, but have you thought about this? Well no, we hadn't thought about that. That's a great idea. Well,

let's try that. So, we iterate this thing, and so you know, these things are complicated. Some things are pretty simple. Some things are complicated. But I think we have to accept the fact that right out the door, everything is not going to be perfect.

But if we wait for it to be perfect, it will probably be overcome by something in 10 years that's already -- because that's part of the culture of this. So, you know, kind of make people like, hey, look, let's just go. Go faster.

MR. O'HANLON: Well, listen, I wish we had two hours, but we only have one. We're going to have to stop there. Please give us a minute or two to leave, and give these gentlemen a chance to maneuver out first. But I think we're all in agreement that we're very lucky to have this kind of a team running the U.S. Department of the Navy, so please join me in giving a hand for the commandant, CNO and secretary (Laughter).

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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