

050616 Air Force Association, National Defense Industrial Association and Reserve Officers Association Capitol Hill Forum with Lieutenant General Stephen Wilson, Deputy Commander of the United States Strategic Command, on "STRATCOM: Reflections on the Past and a Look into the Future." (For additional information on NDIA/AFA/ROA seminars contact Peter Huessy at phuessy@afa.org).

MR. PETER HUESSY: Good morning, everybody. My name is Peter Huessy and on behalf of the Air Force Association and my boss General Deptula of the Mitchell Institute, I want to thank you, as well as ROA and NDIA, for being here at the next in our series of seminars on Nuclear Deterrence, Missile Defense and Proliferation.

I also want to call your attention to the conference yesterday run by Rebecca Hersman over at CSIS, which was an excellent all-day conference on nuclear deterrence. I want to make sure that you get a -- it's online and its very, very good. I also want to remind you that next week we do have three events.

We have Rebecca Heinrichs, my friend from Hudson , and Steve Pifer from Brookings. They're going to talk about the INF Treaty and issues in Europe. Then Ilan Berman from the American Foreign Policy Council will update his book on Iran. And then our good friend Frank Miller, from the Scowcroft Group, will talk about the enduring value of deterrence, including missile defense and nuclear issues.

For those of you in my Space series who attend, Congressman Bridenstine of Oklahoma will be talking about his new space initiative on the 19th . In June, we have two events on June 10th. On the morning of the 10th we're going to have General Formica and General Todorov who will speak about missile defense and a worldwide perspective. At 9:30 a.m. we're going to walk across the quad to the Reserve Officers Association building and hear from Congressman Schiff of California, who will talk to us about his views as to where space initiatives ought to go and what Congress is thinking..

Our July space event will be with Elbridge Colby, that will be on the 14th of July and that will not be here. It will be at the AFA headquarters building in Arlington. He will be talking about Chinese and Russian threats to our space assets.

Today we are very honored to have General Wilson who is, as you know, the Deputy Commander of STRATCOM. I want to thank our sponsors who are here today. I also want to thank our friends and colleagues from the various embassies that are here. I want to thank, General, your staff from STRATCOM that were very helpful in putting this together.

Again, this is on the record. The General has to leave shortly after 9 o'clock. He'll entertain, I think, a few folks after his remarks and have some Q&A. Would you help me give a very warm welcome to our friend, General Wilson?

(Applause).

GEN. STEPHEN WILSON: Good morning, everybody. It's great to be back here again. It's especially nice and I'd like to thank Peter and AFA for all the stuff that you do. The same thing for NDIA and the Reserve Officers Association. It's also nice to catch up with some old friends here, some I haven't seen in a while, like General Elder sitting up in front. I think it's a really interesting time in the world that we live in, so let me couch my remarks kind of along those lines.

We've been addressing strategic deterrence at forums like this with Peter for many years. I had the opportunity recently to talk to one of the TV producers for a big show, and talk about strategic deterrence. I told him that I thought it's one of the most important subjects that our nation faces in the coming years and that the subject is really worthwhile to discuss with the American public.

To do that I think we need to all start with kind of the backdrop of the world environment that we live in. Lots of them talk about the complex and challenging world that you hear about, so I'm not going to be any different. I'm going to also talk a lot about the complex world that we live in, but I'm going to do it by stepping back about two years.

In February of 2014 I was addressing an AFA group at Orlando and talking about the big issues of the day. Here's a couple of things that I didn't talk about. I didn't talk about the Ukraine. I didn't talk about the Crimea.

I didn't talk about ISIS or ISIL or Daesh. I didn't talk about Boko Haram. I didn't talk about new islands in the South China Sea. I didn't talk about a new Chinese Air Defense Identification Zone.

I didn't talk about Sony cyber attacks. I didn't talk about OPM data breaches and things like ransom ware. I didn't talk about a North Korean nuclear test, a North Korean space launch, North Korean TD-2s or Musudans or SLBM launches.

I didn't talk about the Ebola virus or Zika. I didn't talk about the Joint Comprehensive Plan of Action with Iran. I didn't talk about Paris attacks. I didn't talk about Brussels attacks.

I didn't talk about cyber attacks against key critical infrastructure electrical power grids in Ukraine. I didn't talk about any of the enormous refugee crisis or the migration challenges going across Europe and the Middle East. I didn't talk about any of those because at the time none of that existed, none of that had happened.

So I set that as the context to just say, when you look back over the last two years, what a remarkably challenging and complex world we live in. I guess the bad news is, I really don't see it changing anytime soon. I think we're going to continue to live with a pretty complex and dynamic world.

I also believe that those increases in instability and volatility and unpredictability need to be matched by an increase in our understanding, and an understanding of really what's going on and why and what's really happening.

Twenty-five years ago we used to talk about a bipolar world, and a Cold War and warfare that we used to talk about in domains like air, land and sea. Today we don't really use those words very much. We talk about a multi-polar world and domains in which both the U.S. and our allies not only need to operate but dominate. And they're certainly the traditional ones of air, land and sea, but now I throw in space, cyberspace, electronic warfare and information.

As I talk to young people today I try and use a couple of relevant examples I think highlight the changes that are going on. If I asked you to pull out a phone today, probably everybody in this room would pull out a smart phone. Now fast forward 10 years and that smart phone will be 64 times, at least, more powerful than what's in your pocket today. That's Moore's Law, so we'll go through about seven Moore's Law cycles and that's where it will be.

Bandwidth has been doubling every year and it will continue to double, they say, going forward for the next 10 or 20 years. So in 10 years, the bandwidth doubles every year, so the bandwidth will be 1,000 times more than it is today. If I multiply computer power and speed times bandwidth I'm going to get information flow. So in relative terms today what takes 24 hours to happen will happen in half a second. That's where technology is taking us, and that's where we have to be prepared for the future. Today conflict already spills across multiple domains simultaneously. I think in the future all fights will be, again, happen in all domains all the time and at the same time.

We've heard our secretary of Defense talking recently a lot about the five challenges. He talks about Russia, China, Iran, North Korea and violent extremist organizations. Let me just spend a couple of seconds talking about those.

Let me start with Russia. Clearly the Russian actions recently warrant our attention. Their new security strategy makes it clear that they seek to reassert great power status and they're modernizing their forces despite the recent sanctions due to events in Ukraine.

We know that they're modernizing not only their conventional but their nuclear forces. Just last week they had another successful hypersonic glide vehicle test. They're building new Boray-class subs. They have new ICBMs, both fixed and mobile. They're building new air-launched cruise missiles. They're building new bombers.

They're also modernizing and developing their non-strategic nuclear weapons. Again, I kind of step back for just a second, when we talk about non-strategic nuclear weapons I contend that regardless of the weapon that is ever used, when you use a nuclear weapon it will have a strategic effect. But I also remind people that Russia is not

just modernizing its forces, it's modernizing their doctrine, their command and control, their logistics, they're increasing their training, and they're certainly doing more frequent and more complex exercises.

Go on YouTube and you can look at President Putin where he is directing an exercise that has sub launches, ICBM launches, air-launched cruise missile launches, and he's doing all of that from his brand new command and control center. It's posted on YouTube. So Russia's saber-rattling certainly raises questions about their commitment to strategic stability, and I think their recent actions have appeared to erode the principled international order that has served the world well. Their actions in air, land, space, cyberspace, are certainly areas of concern.

I would also say that we're open to having a new relationship with Russia. We want to bring them back into the fold, and efforts are underway to be able to do that. But regarding a resurgent Russia, I think it's important we show strength, that we're balanced and that we're consistent.

And if a resurgent Russia wasn't enough, there's also big challenges with China. You can look at all the events happening today in the East and South China Seas. Whether their neighbors like it or not, they're reclaiming land. They're dredging and building bases in areas that were formerly just coral reefs or outposts, isolated rocks. I would say those areas, as they build up those and militarize those, they potentially threaten the economy of which \$5 trillion of trade traverses that region every year.

The People's Republic of China also continues to build and modernize their own nuclear and conventional forces. Along the nuclear front they have got new multiple warhead ICBMs, new Jin-class submarines as well as their ballistic missiles, SLBMs, hypersonic glide vehicles capable of long distance attack, and an anti-satellite capability. Added to that, some of the exploitation of the computer networks that we see coming from China further adds to this really challenging and complex world that we live in.

You also notice the Chinese military has restructured, they've restructured their forces. They've added a new Rocket Force, so what used to be their Second Artillery is now this new Rocket Force. They've also rebuilt this new force called the Strategic Support Force, where they combine their Third and Fourth Artillery, their space, cyber and EW under the command of General Gaijin (ph). These new organizations, the Rocket Force and Strategic Support Force, are on par with their army, navy and air force. In short, I'd say China continues to shape itself into a very effective military.

Another country of concern is North Korea. Since taking the helm in late 2011 Kim Jong-un has solidified his position as the unitary leader of North Korea. I think he's done that through purges, through reshuffling and through executions. Since taking power he has continued to heighten tensions by both rhetoric and actions.

Recent actions, after their fourth nuclear test in January and then their space launch, has resulted in some of the most stringent United Nations sanctions in history.

Yet they continue to stubbornly go down a path toward nuclear modernization and proliferation. Today in North Korea, on the seventh, they will hold their first Workers Party Congress in 36 years. I think it's also illustrative to look back on North Korea and where we've come and where they're going.

In late 1999 the world kind of talked and said, North Korea will never be able to build a nuclear bomb. Last year the New York Times published a piece that was debating really how many weapons they thought they had. When I was in Beijing a few years ago the Chinese thought that they had 10. Now we're just debating the number.

People say, don't worry, they'll never be able to miniaturize a weapon and never be able to do anything to deliver that missile to areas of concern. Then a few months ago Kim Jong-un showed photos of himself standing next to what he claimed was a miniaturized nuclear warhead.

They've also had some spectacular space launch failures, until they didn't. We've recently seen where they've had failures to their long-range rocket programs and rocket launches. But I'm confident they're going to continue to work and develop those until they don't have failures.

Switching to Iran, they are seemingly stepping away from the nuclear precipice. But as that old famous Cold War cliché goes, "Trust but verify." In our business I think it's prudent that we continue to keep an eye on Iran and its adherence to the Joint Comprehensive Plan of Action.

While we do, let's not forget that Iran is still the foremost state sponsor of terrorism. It continues to exert influence throughout the Middle East through its Quds Force and through its terrorist partner Hezbollah and other proxies. I'd also mention that Iran has the largest stockpile of missiles in the Middle East.

The last of the five challenges is violent extremist organizations in those ungoverned and ineffectually governed regions that remain incubators for those who seek to attack the world's peaceful societies. Terrorist and insurgent groups continue to exploit weak governance and security, economic and political fragility to expand their influence, and they operate freely across political, social and cyberspace boundaries.

The landscape I just painted is, again, really complicated. It comprises a re-emerging Russia, an emerging and ambitious China, a stubborn and indecipherable North Korea, and Iran that skirts the line on what's acceptable behavior or not, and the ever-present threat of violent extremist and terrorists, that adds up to, I would argue, the most complex security environment that I've seen in my 35 years of service.

I use all this kind of as a backdrop to explain some of the things that we're doing at STRATCOM to address and deal with these problems. Our missions, and I note the word missions, are trans-regional and extend from submarine operating depths all the way to geosynchronous orbits where our satellites are operating today.

As a fairly new guy to STRATCOM, I've been there new about eight months, and I look across the big mission areas, whether it be nuclear deterrence, space, cyber, missile defense, electronic warfare, ISR, counter-WMD, there's a lot going on. I'm not going to talk about all those today, but I am going to pick a few of those areas to talk about.

One of the areas that we're spending a lot of time thinking about is, what is strategic deterrence and what does that mean in the 21st century? I think General Dunford, our Chairman, made an insightful statement that perfectly illustrates the complex world that we live in. He said, "We must view threats in the context of trans-regional, multi-domain and multi-functional. We can't look at future conflict as being contained within borders or stove-piped domains within specific areas of responsibility."

So deterring in today's multi-polar world requires us to view threats across the spectrum of conflict. I think it requires comprehensive integrated approaches to strategic deterrence, assurance and escalation control. To do that, I think we need to have a really good understanding and view of our adversaries. How do we acquire traditional and non-traditional information? How do we meld that with historical and cultural norms? And how do we provide options for national security decision makers?

I think to be able to do that we have to conduct integrated and combined operations and activities to ensure our military operations are combined and leveraged with all levers and instruments of national power. To do that I think we need a whole of government approach across the whole diplomatic, information, military and economic, and it certainly has to include our allies and our partners whenever possible and our messaging has to be aligned across all those.

One of those big key messaging areas is about the importance of nuclear deterrence and the triad, and I think that will remain a vital element to our national security. Secretary Carter said in a December 15 speech that nuclear deterrence is the bedrock of our security. It is, therefore -- having a safe, secure and effective deterrent is absolutely critical. I couldn't agree more.

To do that, I think we need a really credible and ready and resilient nuclear force, and we're doing just that. The department is investing a lot of money across our five year defense plan on our nuclear forces. Besides the nuclear, we're also investing a lot in space and EW, and I'll talk a little bit about those here in a moment. But I think it's important that the budget, and what we put in our budget, has a deterrent message in and of itself that people pay attention to.

So let me focus the remaining part of this talk in three key areas: nuclear, space and electronic warfare, and I'll start with nuclear. Obviously there's lots of work being done in this area. Let's start with, again, ICBMs.

I think it's the most responsive leg of the triad, but when you look at it our ICBMs they were fielded in the early '60s with our Minuteman I. Today we operate our

Minuteman III that in effect has been around since the early 1970s, and it needs to be sustained until 2030. It's vital that our new Ground Based Strategic Deterrent remains on-track. It needs to be a fully integrated flight system with the command and control and all the supporting infrastructure that supports that. We're working hard with our Navy partners on, how do we leverage commonality between the Trident D-5 missile and what we can do with the new Ground Based Strategic Deterrent?

The Navy's SSBN fleet is the most survivable leg of our triad. Our Ohio-class subs will continue to operate for the next 15 years. But when you look at it, 42 years is how long we're going to operate Ohio-class subs. That's six years longer than we have ever operated the longest sub in history. I would say that with salt water and metallurgy, physics happens, right? And so we need to replace those subs. It's imperative as we move forward with the new Ohio-class replacement.

Our B-2s and our B-52s, I think are the most flexible leg of our triad. They also provide a really significant conventional capability. Look at the B-52. It's over 60 years old. Our youngster, the B-2, is over 25 years old. So I'm really heartened and pleased to see the progress we're making on our new bomber, the B-21.

I'd also say our bombers need to be credibly equipped. That means a range of options to be able to operate in anti-access and aerial denial environments, and certainly in any non-permissive environment. This, to me, means stay the course on our 3+2 strategy, and this means we need a new long-range standoff weapon, as well as the B-61-12.

I'd be remiss if I didn't talk about how all that has to be connected with the NC3 modernization that's going on to provide a shared, survivable communications from the president down to the war fighter regardless of the environment. Delaying the developing or fielding of any of these new capabilities that I've just talked about put an unacceptable risk to our nation's strategic capabilities.

My boss, Admiral Haney, has been pretty crystal clear on this. He says, we're out of time. Sustainment is a must, the recapitalization is an absolute requirement. I'd also say that as we look forward -- going forward -- we need to make sure that anyone who would wish to do us harm understands the clarity of our will, and that we match that with the ambiguity of how we'd respond, not the other way around.

Let me switch subjects real quickly and talk about space. I mentioned the five challenges earlier, but other nations are developing space capabilities; and they're certainly spending a lot of time observing our reliance on space and seeing what they can do to disrupt or deny our use of space. For example, both Russia and other nations have jamming capabilities that can be used against our space systems. I'd say jamming is a low-tech and low-cost capability that can be used against our space assets. Russia and China have advanced directed energy lasers that can be used to track or to temporarily affect some of our satellites, and both nations are also developing interceptors capable of destroying satellites. They also have the ability, and have demonstrated the ability, to do

complex maneuvers in space.

China has continued its development of its anti-satellite capability, including the nondestructive test that they did in July of 2014. It's similar to the test they did in 2007, but it was nondestructive. They didn't actually destroy the satellite in 2014 like they did in 2007. While I'd say we'd never want to go to war in space, especially a kinetic war, neither should any other nation want to go to war in space.

But the DOD and intelligence community recognize the need to work together to address the increasing threat to our nation's space enterprise. So we've been spending a lot of time recently on a thing called the JICSpOC, the Joint Interagency Combined Space Operations Center. It's going to be a focal point for operational experimentation and test, and as we work with our IC partners, leading a community of effort across the whole space communities. We have ongoing tests as we speak. Experimentation has highlighted the need for continued interagency integration, for information sharing, and for space battle management and command and control.

Turning to electronic warfare, STRATCOM is the joint electronic warfare lead for the Department of Defense. I think there's no domain of conflict, never mind these cross-domain things that we talk about. It doesn't involve the electromagnetic spectrum.

From communicating with forces to operating in cyber, the electromagnetic spectrum is a domain that we simply must dominate. I told a group recently, as we talk about second offset things where we built stealth and precision weapons and we went from kind of a day fighting force to where we then owned the night, we need to do the same thing in the electromagnetic spectrum. We need to dominate the spectrum.

Yet the average person doesn't understand the importance of the electromagnetic spectrum in supporting war fighters. It reaches across geopolitical boundaries and all war fighting domains. Again, what I tell people is 25 years ago if we talked about air, land and sea, today we talk about air, land, sea, cyber and space. And there's one convergence among all those, and that's this place we call the electromagnetic spectrum.

It is being integrated across our society into our critical infrastructure, into how we conduct commerce, into our governance and into our national security. At the same time, it's becoming congested by friendly, by commercial and by adversaries, and contested by adversaries who are rapidly pursuing technologies that threaten our freedom to maneuver and our ability to operate.

So imagine in this room if I denied your GPS, if I denied your cell phone capability, if I denied WiFi, if I denied cable, and the ability that we'd have to then communicate? Well that same thing happens in our military. Without our GPS, without comm links, without our linked infrastructure, our radars and our advanced weapons, in essence we resort back to a World War II fighting force, whether you're Army, Navy, Air Force or Marines. So the electromagnetic spectrum touches everything we do, and we can't gain air, land or sea or cyber superiority without control of the electromagnetic

spectrum.

I've tried to highlight a few of the global challenges we face in this world today, from the spread of technology, to violent extremist organizations, to what's happening in Russia, China, North Korea and Iran. I think going forward how we address those comprehensively, and what strategic deterrence is in the 21st century, will be vitally important not just for today but for future generations going forward.

So let me stop there and see if there's any questions I can answer from this group.

(Applause).

MR. HUESSY: Yesterday CSIS had an all-day conference on nuclear deterrence. Proposals were made by a couple of people to get rid of the long-range strike option ALCM and the nuclear warhead, as well as getting rid of Minuteman. Could you review kind of how you -- if those two things -- what the downside is if something like that is implemented?

GEN. WILSON: Thanks, Peter. Let me start with Long Range Standoff. Everybody in this room probably knows our ALCM missiles were designed in the '70s, built in the '80s, and designed to last 10 years. We're on our fifth service life extension program for them. I've heard people talk about how our missiles are destabilizing, and yet they haven't been destabilizing for the last 50 years. In fact, I think they're very stabilizing.

The plan for the new Long Range Standoff is to basically take the warhead out of today's ALCM and put it on a bomb body or weapons body that will allow it to penetrate the environment that exists today as that technology has spread, to be able to get to the target. So we're not building new weapons. We're taking the current ones that we have, the warheads out of the ALCMs, and we're making them more safe, more secure, and we're putting them on a bomb body that can make it to the target.

I think that's absolutely necessary. I think without that we really don't have an air leg of the triad. The majority of the capabilities will be delivered by B-52s, which are a standoff platform, and without that we'd lose the air leg of the triad in large measure.

So I think it's essential going forward that we have that capability. We do it today. In any conventional fight we have the ability to go both standoff and direct attack to hold enemy targets at risk. We'd want to have that same capability.

As I mentioned, when I was in Beijing the Chinese mentioned that they thought North Korea had 10 nuclear weapons. This was a few years ago. If we didn't have an ICBM force today spread across great distances -- take the Malmstrom Missile Complex. I'll get the numbers wrong. I think it's something like 14,000 square miles, just the Malmstrom Missile Complex.

If a nation were to attack us, they'd have to go all in to take out our ICBM force, because I have 450 missiles spread throughout the United States in five states across huge areas. Without that, you could count in this room and go down and do the math and look at the bomber bases that we have, the sub bases that we have, and say, how could I hold at-risk the United States? With a very small number of weapons I could certainly hold the delivery platforms, where they're delivered from, at-risk. I could add a couple more and maybe throw out all our national labs and where they're produced and where our weapons storage area is.

And so for that same number of weapons that I just talked about that North Korea possessed, and have the ability to destroy our intellectual capability, our production capability, and our delivery capability for about 20 years. And that's what the Chinese told me a couple of years ago. So I think having a very affordable deterrent capability, like today's ground-based deterrent, Minuteman III going to a Ground Based Strategic Deterrent, makes great sense for our country. Again, it means an adversary has got to go all-in with a large number of weapons if he's going to attack the United States.

Thanks, Peter.

MR. PETER SHARPE: Peter Sharpe with the Mitre Corporation. Of the three specific challenges you mentioned, there has been tremendous effort on thinking through strategically what the nuclear deterrent means in the 21st century. There has been tremendous effort thinking strategically about what resilience in space means and how to achieve it. Has there been a comparable effort in the electromagnetic spectrum that we just don't know about because it's classified, or are we in catch-up mode there?

GEN. WILSON: The answer is we have a lot of work to do on our electromagnetic spectrum. I think that for a long time we didn't pay as close attention to it as we should have. As we look at what's happened -- again, I tell people the spectrum is a physical, defined area. We know where it goes from, from our low-bands all the way up to our protected bands of communication.

I'd say that our adversaries paid very close attention to it. Some of it we've sold off to commercial. We've put ourselves into more and more defined narrow bands, and our adversaries have lined up capability against it.

So we now are thinking through, how do I enable freedom of maneuver and action throughout every form of spectrum, from our narrow up through our protected bands? We're working hard on that. I know that, at least in the past, we've talked about, how do I have globally assured communications, from narrow band, wide-band, up to assured communications globally, including space, including terrestrial? How does that work?

There's a large amount of effort underway, but the short answer to your question is I think for a period of time we weren't paying as close attention to it as we needed to be. As recent events have highlighted, others have. They've paid very close attention to

it and they've got a very robust force that's committed to being able to dominate in the spectrum. So we're working hard on that area.

MR. BILL BRIDERICK: General, Bill Briderick for Briderick and Associates. Could you reflect on who at STRATCOM or who in the government of the United States is thinking about cyber war doctrine, particularly on the defensive side. You mentioned cyberspace several times. We have a very highly defined doctrine in terms of deterrence. We don't seem to have a highly defined doctrine in terms of offense versus defense and whether or not engaging in offensive cyber warfare may actually be harmful in the long run because of inadequate defense.

GEN. WILSON: You're bringing up a great question. I know that Admiral Rogers and his team at CyberComm are spending a lot of time thinking through this, working with the department on what's the right mix and how do we do this, and thinking through everything from doctrine to strategy to how will we do this. Defense is a big part of what we have to have across the cyber domain, not only for the military, for the Department of Defense, but I'd say writ large for the nation. Cyber is CEO business. You see that as you're walking around, and if you're not paying attention to it, you're really not paying attention. So an effective defense is really important. I agree we, as a nation, need to be thinking really long and hard on that subject. It's something we can't afford to get wrong. So I think it's a great point and a great question.

MR. : There's a lot of talk about how many bombers we need. Could you elaborate on how Strategic Command is thinking about this and how many bombers we might need in the future?

GEN. WILSON: Let me tell you that General Rand and the folks down at Air Force Global Strike Command are working today to be able to build a bomber roadmap and to flesh that out with the ongoing plans work across the nation to come up with the answer to that. I would argue, just without fact, without numbers to back up what I'm going to say here, that when you look at what bombers bring in terms of range, persistence and payload, we have a deficit of long-range strike capability. What that number is going forward, I can't tell you what it is, but I would say we're not where we need to be on long-range strike. As I talked about those problem sets and the challenges we face, what bombers bring is payload, range, mass, precision and persistence, are unique capabilities. So General Rand and his team are thinking through that to be able to come back and answer the question, what is the bomber force structure and the numbers requirement capacity that we need going forward?

MR. : When I look at the Air Force strategy I see bombers playing a much more significant role than they might have in the past, relative to fighters. Do you see that trend?

GEN. WILSON: Well, I see that we're going to need a mix of forces. I certainly see the importance, again, as adversaries continue to build advanced anti-access area denial capabilities to keep forces further out, the importance of bombers will become

more important in that ability. Today you look at -- I used to work for General Buzz Moseley when he was the AFCENT commander in the Middle East. General Elder was there too, and we talked about what our bombers brought to the fight.

Back then I was flying B-1s and they used to call it the roving linebacker. As a bomber guy, associating bombers and linebackers, I actually like that because we were pretty significant in the Linebacker Campaign. I digress, but I'd say what they thought about it was they were able to move around the AOR fast. You were able to bring a lot of weapons and hit hard when they got there, and stay on-station a long time. So when General Mosley referred to his B-1s as his roving linebackers, I thought that was a pretty good analogy.

That same thing is happening around the globe today. Today we have B-52s in the Middle East in the counter ISIL fight that are doing a pretty terrific job. And again, what they bring is payload, endurance, and capacity that we often don't have.

MS. : I'm curious as to how you might harden the GBSD for an A2AD environment? Then separately, how many assets do you think you would need, either airborne or ground, to create a more mobile command and control for GBSD?

GEN. WILSON: As we work through GBSD we're going to basically take the existing infrastructure we have, replace the flight systems, the command and control, and the support that goes with that. We're looking at the specific requirements on how do we harden them. They're going to be hard enough, is what I'm going to tell you, in terms of the requirements to meet any specific threats.

In terms of how we look at the command and control piece, there's a lot of people working that specific problem hard, for the command and control that goes with it. How do we do that? Is it through fixed? How many fixed? Is there a mobile piece? How many mobile?

They're looking through the whole gamut of options on how we would do that and potentially do that differently given where technology is taking us and some advantages that we have today. I tell people, we built -- think about this, we built the Minuteman I before the first satellite had ever been built or put in orbit. There was no Internet. Computers back then, in the late '50 since we were building for the early '60s, the capability that we had and what's available today -- as we look at all those, how would we do this differently? There's a team that's working hard and taking ideas forward to Mr. Kendall and OSD on how do we do that differently on the command and control piece.

MS. : And what kinds of conversations would you have to have with the Navy, because aren't you leveraging E6?

GEN. WILSON: Well, we use the E6 and our airborne command post capability to provide capability to launch missiles from the air. We do that. So we're working with

the Navy on that.

But what we're really working with the Navy on how do we do intelligent commonality so that as they move forward with their programs, where it makes sense whether it be in guidance, propulsion, electronics, materials, that we can leverage each other and not have to do the same thing twice. So Admiral Benedict and his SSP guys are working with the Air Force Nuclear Weapons Center. They've been meeting regularly and they are coming up with those things that make sense to do in common.

MR. PHILIP SWARTZ: Good morning, General, Philip Swartz with the Air Force Times. You mentioned Russia testing their boost glide hypersonic vehicles. Do you believe that there's a role for that type of technology in the American nuclear deterrent system, and what sort of emphasis would need to be placed on that to make it a reality?

GEN. WILSON: You're certainly going to see China and Russia doing that. We think that -- we haven't explored it in the nuclear arena. We think that having a hypersonic glide vehicle -- and speed matters. Speed complicates everything.

What I would say is our adversaries are doing that because it complicates any type of defense. And as technology moves forward, I think that technology will become important across the -- again, as adversaries build up capability, they're doing it to defeat our missile defenses. We're going to need to look and pursue that same type of technology with hypersonic glide weapons.

MR. JIM ARMOR: Good morning, Jim Armor with Orbital ATK. Back on the space domain for a second, I'm really pleased with the progress you're making in the JICSpOC and the other space situational awareness and attribution of bad behavior in space. But taking the other side, how about making our systems more defendable, like the SBIRS satellite maybe diversifying it, disaggregating it, making it hard for adversaries to go after important U.S. assets? How would you grade our progress on that side of the equation?

GEN. WILSON: Well, I'm grading it as a work in progress. Certainly General Hyten and his folks are doing just that. They're going through a space enterprise vision on what does that look like and what can we aggregate or disaggregate, and how would we do that differently? He's got a bunch of folks working really hard with that, with the secretary of the Air Force, to bring forward some ideas on how we'd do that differently and what does the architecture look like?

I think you're hitting a really important part of this resilience, and again, how would we thoughtfully do that? The budget environment in which we also live plays a piece in that. So General Hyten and his folks are all working incredibly hard bringing forward ideas on that.

MR. BRIAN EVERSTINE: Good morning, Brian Everstine with Air Force

Magazine. A couple of years ago the Navy got the Sea-based Deterrence Fund set up to protect its investments in nuclear recapitalization. Since then, some Air Force officials have pushed to expand that to all legs of the triad. Can you give an update on those talks, if they're happening, and if that is a way forward to protect GBSD and the B-21?

GEN. WILSON: I haven't been involved specifically in those talks. I know there are talks, so I'd say it's a question best left to the Air Force specifically to answer. But you know, in the main we think that that makes sense. These are a national priority, just like the Navy said, I can't -- I need a special fund to be able to afford the new Ohio-class replacement, and they got the Sea-Based Deterrence Fund. I think that same argument could be made for the other pieces, because again, this is something we recapitalize about every 50 years. And to be able to set aside a fund to be able to do that makes sense. But I'd say probably the best place to ask that is the Air Force and see if they're specifically on that.

MR. : You talked about deterrence and assurance, and I think people are very familiar with it. Could you talk a little bit more about what STRATCOM is doing in terms of employing capabilities for escalation control?

GEN. WILSON: Escalation control, we look at how -- let me answer in a broad way. As we look at this world that we live in today and the challenges faced with nation states that possess nuclear weapons, and with nations that have changed their doctrine that says that I'm going to escalate to de-escalate, what does that mean and how would we respond? How would we respond in-kind? What would the response be? What would the range of responses be, and to be able to think our way through that.

So we've had a number of tabletop exercises. We've had some war games. We just participated in an exercise with our Pacific Command partners on thinking through those type of scenarios. We continue to work with our EUCOM partners to think through that same scenario with Russia as they make their actions in Europe, specifically in the Baltics, and what they've said in their rhetoric about what our range of options would be and the options we'd offer the president to de-escalate any conflict.

When you really work your way through that it gets really hard and complicated. So we've brought in a whole group of folks from academia. We've brought in other partners and allies. And again, we've started with everything from tabletops to war games to now into our exercises, and we're looking at how we branch that across our family of plans. That's the short answer I'd tell you of how we're doing it and thinking our way through escalation control.

MR. ROBIN MCKAI (ph): Robin McKai, PWC, thank you very much for your remarks today. I'm curious if you could address some of the human factors or cultural elements that might be necessary in an overall modernization effort of the ground-based part of the triad?

GEN. WILSON: Just broadly, it's a great question. It's bad on me for not having

talked about what I consider the most important part of this, and that's the people part, as we develop people that understand and can articulate what deterrence means in the 21st century. How do we get the workforce the right education, training and experience to be able to do that? And I would argue that broadly the nation and the Department of Defense stopped thinking about deterrence in 1992. We took a big hiatus in thinking.

So how do we develop the next Brodies and Kahns and thinkers that have thought their way through these problems? How are we doing that from our civilian workforce and across our military writ large? Lots of effort is underway, everything from foundational training that we do at each of the developing basic military training places, to how do we infuse our war colleges and our places that we do our intermediate education and things like Army Command and Staff College, Marine Corps Command and Staff College, Navy Command and Staff College, or Air Command Staff College?

How do we get deterrence thinking in their lexicon? How do we use that human capital to help us solve some of our hard problems? And then how do we do that at all different levels? How do we partner with academia around the globe that's doing some phenomenal research? How do we tap into the research?

So locally in Omaha we've got some partnerships with 23 civilian universities that are helping us with some research. We're using their expertise. Again, as we partner across different academic across the country, we've got a couple of really exciting programs to get Masters degrees from some really topflight universities for our folks.

But the broad question is, how do we develop the human capital, the people, in the changing and thinking that needs to go forward for 21st century deterrence? That's one of our major lines of effort because what will be successful is when our folks really understand this deeply, that they can articulate it, they can articulate why it's important, and that we have a foundational level across not just places like STRATCOM, but throughout our military.

And I would tell you, if you listen to all the combatant commanders today, as they testify, as they talk, you're hearing the lexicon different today than just a few years ago. You'll hear -- General Breedlove passed the flag over to General Scaparrotti a couple of days ago, but you hear him talking a lot about deterrence, about assurance of allies, about escalation control. EUCOM commanders weren't talking that way five or 10 years ago. You'll hear that same talk from Admiral Harris in the Pacific.

We're making progress. This human capital development is arguably the most important effort we've got going forward. It's a great question.

(Applause).

GEN. HUESSY: Thank you, General Wilson. Just a note, General Rand was going to speak in June, the day before Admiral Benedict. He has asked to postpone that and re-schedule for July 28th, which will be after General Weinstein. Put that on your

calendar, just make a note of that.

General Wilson, thank you for an extraordinary set of remarks and great Q&A. We'll have the transcript for you in a couple of days. Would you give another round of applause?

(Applause).