

042619 Air Force Association Mitchell Institute for Aerospace Studies, National Defense Industrial Association, and Reserve Officers Association Capitol Hill Club Seminar with Retired Air Force General Kevin Chilton, Senior Fellow at the National Defense University; and Retired Air Force General Robert Kehler, Senior Fellow at the National Defense University, on “Perspectives on Nuclear Modernization”

(For additional information on AFA/NDIA/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 Mitchell Institute for Aerospace Studies, I want to welcome you here to the next in our series of seminar we’re doing on nuclear deterrence, missile defense , arms control and proliferation.

We have two upcoming events. On April 30th my colleague at Hudson, Rebeccah Heinrichs, and my friend at colleague at CSIS Tom Karako, both of whom I work with on missile defense and nuclear issues, they’re both going to be talking about NATO and East Asia and some of the aspects of missile defense and nuclear deterrence, in particular with questions with respect to Russia in the Eastern Europe zone, and with respect to East Asia and North Korea. I urge you to sign up and come and hear them both. They’re extraordinarily good analysts in this business.

And then on May 3rd our next Space Power to the Warfighter breakfast with General Crider, who will be here, as I said, May 3rd. I also want to make a note that on August 22nd and 23rd we are celebrating the 60th anniversary of SSP’s work with Crane, the Navy base in Indiana. We’re having a reception on the 22nd in Wilmington, and a conference on hypersonic and the nuclear triad on the 23rd. We are having industry panels on hypersonic, and if you’re interested in attending the registration and the invite letter will be going out momentarily. But please let me know.

Then on October 8th our Minot Task Force 21 Triad event will be here in this building, in this room, on October 8th. I just want to say hello to my friend Mark Janser, who is here from North Dakota escaping the wonderful weather.

I want to welcome, of course, General Chilton and General Kehler. To do the introductions, would you welcome my boss, General Dave Deptula, the Dean of the Mitchell Institute.

(Applause).

GEN. DAVID DEPTULA: Thanks, Peter, and good morning ladies and gentlemen. Welcome to the event this morning. I think you all know you’re in for a real treat today, as we welcome two of the world’s pre-eminent experts on nuclear strategy to address their perspectives on nuclear modernization. Generals Kevin Chilton and Bob

Kehler, both as all of you know, they're both former commanders of Air Force Space Command, as well as commanders of U.S. Strategic Command.

I'm very proud to have known them both for many, many years. General Chilton and I go all the way back to 1980 when we flew F-15s together. He went on to fly three space shuttle missions before senior command positions at AF-Space and Strategic Command. I also had the privilege of working with General Kehler as we worked through standing up a nascent organization of cyber capabilities for the Air Force.

Both went on to become two of the greatest intellects on the subject of nuclear deterrence. I don't know how many of you have read the book "The Wizards of Armageddon," about Brodie, Kahn, Wohlstetter, Marshal and others. But perhaps someone needs to think about writing a book about Chilton and Kehler, entitled "The Wizards of Deterrence," because that's what they are. And that's why nuclear modernization is so important.

So without further ado, please join me in welcoming Generals Chilton and Kehler. I believe General Kehler is going to go first.

(Applause).

GEN. ROBERT KEHLER: That's some kind of introduction. I've been called a lot of things, I've never been called a wizard before, so we'll see. I have a quick story to tell you first.

I had known Kevin Chilton from a distance and admired him from a distance for a long time before we actually got to work close to one another. He was at Air Force Space Command Headquarters and he was moving out of there. I got asked to come to Air Force Space Command Headquarters.

He went off to take command of a wing. Shortly after I went off to take command of a wing, not the same wing, but I kind of followed him on the wing command trail. He went off to the Pentagon. I went off to the Pentagon.

He went off as a three-star into STRATCOM. I went off as a three-star into STRATCOM. He went to Air Force Space Command. I went to Air Force Space Command. He went to STRATCOM. I went to STRATCOM.

And then, I called the personnel people and I said, I don't care where you send me, but send Chilton to Hawaii.

(Laughter).

It didn't work. He went to Colorado Springs, which would have been okay too.

Good morning, everybody. Peter, Dave, General Chilton, guests, it's a pleasure.

I've been to a number of these, both as a member of the audience and as a guest speaker, so Peter thanks for what you do and how you do it. Where the heck are you? There you are.

I think these are very, very valuable and I'm always very appreciative to come and be a part of the conversation. So, in the interest of time I'm just going to hit four points that I think might be interesting for discussion. First, let me remind everybody that deterring the actual or coercive use of nuclear weapons against us and our allies and partners remains the number one national security priority of the United States of America. There is no higher priority.

And so when people say, well, we might not be able to afford or perhaps we ought to do something different, I like to remind them that this is the highest defense priority. As far as I can see into the strategic future, we are going to have and we are going to need, nuclear weapons and a nuclear deterrent. I think that will remain true until something takes the place of nuclear weapons in terms of their deterrent value, and that is not individual conventional weapons.

We don't rely on them the same way that we did during the Cold War. The massed armored formations of the Warsaw Pact evaporated along with the Warsaw Pact. One day there was a Warsaw Pact and the next day there wasn't.

And so we don't have to think about nuclear weapons quite the same way that we did, and they are one tool in a deterrence kit that is much bigger now than just nuclear weapons. But they remain the most important piece and a nuclear attack on us or our allies remains the worst case scenario no matter how you think about that. So, no other weapons carry the same risk and consequences, and no other weapons have the same deterrent effect.

The second point I want to make is, in my view anyway, current U.S. nuclear policy is sound. It has evolved over many, many, many years. We have not seen a revolution in our nuclear policy. We have seen an evolution in our nuclear policy, and it has been remarkably consistent over the decades. It has changed, but I think it has changed when it has had to change.

So why is that important now? Well, I think the latest Nuclear Posture Review continues that consistency. But it evolved to address a threat that now looks different today than it did 10 years ago, or even at the Nuclear Posture Review that was conducted in 2010. We live in a different time now than then, and we certainly live in a different time than we did at the end of the Cold War in 1992.

But this is not Cold War nuclear policy that we are talking about. It used to make me bristle at STRATCOM when people would say to me, you're stuck in the Cold War. In my view, we were maybe the farthest ahead in thinking about the world today.

So I think that the changes that you see in this Nuclear Posture Review,

recognizing once again that we have near peer or almost peer, or maybe in some cases peer competitors, that they are engaged in their own strategic operations to make sure that our power is being diminished and our prestige is being diminished, and that we are unable to project power seemingly at will like we have done -- in their eyes, anyway -- for the last 20 plus years. So there is a red strategy that is being executed here, and we need to be mindful of what that red strategy is.

So, low yield nuclear weapons, I am in favor of making sure that there is no place that Russia or China or some other nuclear nation can go because they think there's a gap in our deterrent capability. So I am in favor of that, and I think that it is not some radical new change. We've had low yield weapons in the past.

People say to me, well, they're new things. I don't think so, I don't think that a low yield weapon is a new capability.

The Nuclear Posture Review highlighted the need for tailored deterrence. That's a recognition that not all of red is the same. That's a difference from the Cold War, where we basically viewed red as a monolith. That's no longer the case, and I think that's correct.

Red is not a monolith anymore. You've got to look at these individual actors individually. That puts a tremendous burden on the intelligence community, by the way, because when you do that you have to know more about their objectives, what their intents are, what their capabilities are for sure, and you have to understand about how they make decisions, who makes them, etcetera, etcetera.

If you don't understand that about red, then it's very difficult to come up with some strategy to deter red. So you've got to think differently about each one of these, and it's a different mixture of deterrence tools that we need to bring to bear on each of these individual pieces now.

A professor named Paul Bracken has written a book called "The Second Nuclear Age." I'm not selling his book, but you ought to read it. It's pretty good. It says, nuclear weapons are back, not to repeat act one but for act two. I think that's the way to think about it.

Declaratory policy, I think the last two NPRs are pretty consistent. Those two NPRs have both said that the United States will consider using nuclear weapons in extreme circumstances when vital national interests are at stake. That was the calibration point for my thinking as the commander of STRATCOM if we were ever going to get into some situation where we were considering or discussing the possible use of nuclear weapons.

Why is that important? Because today there is a renewed conversation about authority to use nuclear weapons and who has authority to use them. That authority rests

with the president, but the context of those decisions reside around extreme circumstances when vital national interests are at stake. And as I reminded people a little over a year ago in a hearing, the United States military does not blindly follow orders. Any order that is given from any order giving authority has to be legal.

The third point I want to make is the triad. I'm a triad fan. I will remain a triad fan. I believe that it has demonstrated over time that it is the most effective -- and by the way, once you get finished recapitalizing it -- the most cost-effective way of providing the deterrent capabilities that we need.

I think it is the way, the foundational way that we both prevent the use of nuclear weapons in an employment sense and in a coercive sense. So, it's a mixture of systems, it's a mixture of weapons, it's how we hold an adversaries most valuable targets at-risk with the credibility of an assured response if it's ever needed. That is the essence of deterrence.

But, there's a difference. We do not use the triad today the same way we used it during the Cold War. That is not a well-known fact, particularly inside the Beltway here when we have this conversation about whether or not we need all three legs of the triad, and here's the difference.

Because we have ICBMs that allows us to do two things that we have done since the end of the Cold War. One, is to adjust the number of submarines that we put to sea. And two, it has allowed us to remove the bombers from their nuclear commitment and allow them to be first committed to conventional operations, which they have been doing at the behest of forward commanders now for well over 15 years.

We only have the Cold War triad if we decide to generate the bombers. That's a presidential decision that would not be taken lightly. So, for day-to-day purposes the nation relies on a dyad. If we eliminate the ICBM leg then the choices are have a monad with the risk of technical failure or adversary advances in defenses of some kind, anti-submarine warfare defenses, that would leave us with a noad. Or, it would leave us with the choice of putting bombers back on alert, which carries its own cost and risks associated with it.

We do not use the triad the same way today that we used it during the Cold War. That is not a well understood fact. And so when people say, get rid of the ICBMs because you have a triad, the answer is, well, you do but we rely today on the dual capability of the bombers, kind of like we did with the dual-capable fighters for all that time, and still rely today.

The strategic deterrent value of the bombers today is as much in their conventional capability as it is in their nuclear capability. It's something that we talked about pretty widely when we were discussing early on, both of our uniforms, what has become the B-21. There's tremendous value in their ability to deliver conventional weapons and be able to upload them with nuclear weapons if possible or when needed,

and recognizing that there is a bomber counting rule. Bombers count as one, not as the number of weapons that they can carry.

So, some have recommended eliminating ICBMs. I would tell you that would be a serious, serious mistake. It also makes an enemy targeting problem easy and it removes the cost-imposing strategy that we have put on the enemy.

And by the way, people say the ICBMs are vulnerable. Yes, but only to a massive attack from the Russians with all of their highest quality weapons. Okay, they're vulnerable to that, but that's what it takes to deal with them.

If you're the Russians and you are planners, you must deal with them in some way. You can't assume them away. You can't assume that they're going to be gone, therefore don't shoot them; or you can't assume that they're not going to be gone. It's a conundrum. A prudent planner would tell you no, you've got to deal with them somehow. That's the reason for our ability to do something different with the triad today, because of the readiness of the ICBM.

So, the fourth point I'll make and then I'll get off the stage here, the time has come to modernize these platforms and the weapons and of equal importance the nuclear command, control and communications system. It's a good news, bad news story for NC3. The good news story is it's really old and so it doesn't have some of the same cyber vulnerabilities that other things have. Here's the bad news, it's really old and it doesn't have some of the -- etcetera, etcetera.

Here's my point about the NC3 system, and here's the way I would like you to think about it. There are things that we have to do today to make sure that the NC3 system as we know it will continue to work, if it has to, in extremis. There are some things that we are going to have to do, some investments that we are going to have to make.

But the way that the NC3 system is constituted today will not be acceptable for the future. There needs to be a new way to do this. I know the people that are working on that inside the Pentagon and the people that are helping them do it, are going to rely on industry to help in a significant way.

The last time we made a concentrated effort to upgrade and modernize was during the Reagan administration. Some of the weapons that were brought then are gone, like MX missiles and advanced cruise missiles. The B-1s are out of the nuclear business, but we are still relying on B-52.

The Ohio submarines and the D5 missile are still out there today and they will be replaced, and rightfully so. Those are critically important assets for our deterrent. But the rest of the systems, Minuteman, B-52s, ALCMs, all deployed earlier, and in some cases much, much, much earlier. So the time has come, they have reached the inevitable end of their service lives, and we've got to get on with modernization.

So, let me just close with saying I think that clarity and consistency in the dialogue are as important today as they ever were. I'm a little concerned that the consensus that was built -- pretty carefully I thought, over the last maybe minus five years ago and prior -- was built because there was a balance with our friends across the street here. There was a balance between the need to continue to work on reductions, i.e. arms control process, and the need to modernize. There was a balance between those two things.

I'm a little concerned that that balance -- I don't know that it has been re-struck. I'm only basing that on what I read in the popular press. So I'm a little concerned about that consensus as we go forward, and I think that that's something all of us need to be very mindful of.

I don't think it's going to be acceptable -- nor do I think it would be right -- to say back away from arms control, it's not worth anything, let's do modernization. Nor do I think it's helpful or useful to say the objective is arms control. The objective is not arms control. The objective is not not arms control. The objective is national security, and the way we need to position ourselves in order to enhance our national security.

So, with that I will sit down and be happy to participate with General Chilton when it comes time for questions. Although I must request, respectfully, that you give him all of the difficult questions, please. I'd be happy to take the others.

(Applause).

GEN. KEVIN CHILTON: Thanks, Dave and Bob, for the opportunity to be here today. Peter, thank you for the invite and bringing us together. And thanks to the Mitchell Institute. Dave, I'm almost wondering if I'm going to have to go to confession when I get back home for being accused of being a wizard. That's kind of verboten in my church, anyway. That was too kind of an introduction and I appreciate it.

Bob alluded to the fact that our careers often times ran in parallel along the way. What he didn't mention, kindly, was that at every turn, certainly at Space Command and at STRATCOM, he had to come in and sweep up all the broken glass I left on the floor as I went out the door.

So, in this case the tables are turned. I get to follow Bob. However, after listening to that presentation there's no broken glass to be swept up at all. There's no daylight between me and anything that General Kehler just articulated. That was a brilliant summary of where we are today and what we need to continuously focus on as fundamentals for national security.

We can't forget the purpose of our nuclear arsenal is to deter and assure. To fulfill this purpose we must demonstrate capability and signal our will to impose costs on or deny benefits to our adversaries.

These are the fundamentals. They are basic to any form of deterrence whether you're trying to deter, as my father used to do, with a sign on the door to the gate to our backyard that said, "Beware of Dog" even though we didn't have a dog. Although it wasn't as effective as when we did have a dog, that was demonstrated capability.

The other day I was with a senior person in the nuclear weapons business who was giving a great motivational talk on the importance of the sustainment of our nuclear weapon stockpile, but said, "We want to be sure we never use these things." I say no, we use nuclear weapons every single day for the purpose that they were designed for, which is deterrence.

Bob mentioned being accused of being stuck in the Cold War. Whenever I'm having a discussion or debate, and we get to that point where the person on the other side says, "that's just Cold War think," I know I've won the debate. I've won the debate because they've run out of rational arguments to present to counter the position on deterrence, and they throw that on the table.

The other one is, "That capability could lead to nuclear war fighting. We can't have new weapons. You can't have new capabilities because that will increase the chance of nuclear war fighting."

When this position is tabled you can conclude that the person who uses this argument either does not understand or does not believe in deterrence because this is not about nuclear war fighting at all. It's about deterring nuclear war fighting.

And, it's about deterring conventional war fighting between major powers, the likes of which we have not seen since World War II. We would do well to remind ourselves of the cost of World War II on a regular basis. It's fading into history with the last of the "Greatest Generation" that fought and won that war. The stories will fade, but it is at our peril that we forget the cost.

I'm a numbers guy, an engineer. Bob's a musician. He's a music guy. So, you've got a left and right brain coming at you today, which I think is powerful.

The estimates of deaths in World War II were somewhere between 60 and 80 million worldwide. Not casualties, dead. When you hear casualty numbers they include wounded and that would be a far larger number. So, sixty to 80 million human beings killed over the period between 1939 and 1945.

I'll pick 72 million because it's a convenient number that allows me to do math in public, and it's in the middle of the estimate. Seventy-two divided by six years is 12 million a year on average. It's a million a month, dead. That's over 30,000 dead every day on average for six consecutive years.

Vietnam losses for the U.S., a day and a morning of World War II. U.S. Korean

war losses, about the same. Nothing scales like this. Nothing compares to it, and it all stopped in 1945. And I don't believe it is coincidental that it stopped. I believe it is a direct result of the development of the nuclear deterrent. So we do ourselves a favor to remind ourselves why we have these weapons and the purpose they serve.

For those who say they envision and dream of a world without nuclear weapons, I say you don't have to dream. Just read the history of the world until 1945. It's not a pretty history. And I see nothing in human nature that would suggest to me that the last Adolph Hitler, the last Genghis Khan, the last Mao Zedong, the last Joseph Stalin, has been born. In fact, I see just the opposite in the headlines every day, stories of the evil nature of people that just does not go away, nor their thirst for power.

Earlier this week Bob and I agreed he's speak first this morning and I'd follow up on anything he didn't talk about that I thought would be important to add. Well, he stole my entire speech. But I'm going to pile on a few things and hopefully add to the discussion in the Q&A afterwards.

Peter asked if I'd address the notion of conventional deterrence, that is non-nuclear deterrence. I certainly believe there is a role for conventional arms in deterrence. Indeed, I think they are necessary, but they are not sufficient, and certainly not sufficient when it comes to a world where nuclear weapons exist. Those who would argue that conventional overmatch could replace our strategic nuclear deterrent I think don't understand the reality of what it means to have a nuclear weapon versus what it means to not have a nuclear weapon.

There's just no equivalency, in my view. I would like to tell a couple quick stories to paint a picture in your mind of this view. Who was alive during the Reagan buildup? (A few hands go up). We never quite got there, but it was going to be 40 wings of combat aircraft for the Air Force, a 600 ship Navy, and I think, I've never can quite nail this down, but about an 18 armored division Army. We never got there, but we were heading that way during the buildup.

I would point out, we have less than 20 fighter wings today. We have less than a 300 ship Navy, and we no longer have armored divisions in the Army, they're Brigade Combat Teams. So we are way smaller today than the Reagan build up envisioned.

But suppose, if tomorrow I could wave a magic wand and give the United States of America the entire Reagan conventional buildup, but at the same time take away our nuclear deterrent and then give 30 nuclear weapons and 30 rockets that could range 30 cities in the United States to Mr. Maduro down in Venezuela. In spite of what he's done with his country, which country would be the power in the Western Hemisphere? Who would kowtow to whom? Us, with our great conventional might, or him who could eliminate the United States of America as we know it today? That's how powerful these weapons are. And so they are and should always be our first priority for National Defense. On this point I couldn't agree more with Bob.

Let me shift to ICBMs, because there has been a recent debate tabled on the land based leg of the triad suggesting that maybe we don't need that leg, or that we can't afford it -- I'll talk a little bit about affordability here in a minute. This position seems to be setting up a debate on a compromise solution that would recommend we reduce the number of ICBMs.

Just to add to Bob's remarks, the ICBM leg, I believe, is the most stabilizing leg of the triad. What do I mean by that, strategic stability? By Strategic Stability I mean our posture does not invite a first strike from the adversary.

Think about that. You want Vladimir Putin and his generals to wake up every morning and say, today is not a good day to strike the United States of America. That's deterrence. That's successful deterrence. And that is what I call Strategic Stability.

As Bob alluded, if we were to eliminate the land-based leg of the deterrent there would be only a handful of targets an adversary would have to hold at-risk in the United States to totally eliminate our nuclear capability, except for the few submarines we might happen to have at-sea that day. That's not a good thing. That's the kind of posture that would lead an adversary to contemplate a first strike. Worse yet, would be if one or more of their attack submarines found one of our strategic submarines at sea. The thought that it might be a good day to roll the dice and just end it suddenly becomes something to consider, because if you do it, the United States has nothing to come back and really threaten you with in a huge way.

The adversary shoots 10 of its 1,550 strategic weapons and we have not very many left over. The next question asked of our leadership is, "do you really want to shoot those remaining few weapons at us, because we still have over 1,500 weapons aimed at your cities? I think a believable conclusion to this scenario is that a future president would likely run up the white flag to preserve U.S. lives.

Now, let's look at our current and planned posture. As Bob said, to address the retaliatory threat of our ICBMs an adversary would have to commit all of their best weapons at those silos. Further, their planners also have to understand that, because our ICBM forces are on alert, when their best weapons arrive they may strike empty silos. Another calculus that leads to the conclusion, today is not a good day to strike the United States.

So the numbers and posture of the ICBM force are critical for Strategic Stability and deterrence. And with regard to posture, we should never, ever consider de-alerting our ICBM force. If we do that, from a strategic stability perspective, we might as well fill the silos with gravel. They've lost their true strength and utility. It's that uncertainty of what we might do, mind you not what we must or will do, it's that uncertainty of what we might do if we are launched on, that adds to their deterrent value.

By the way, I hate the word "hair-trigger" alert. It is also used as a last minute I've run out of good arguments to try to sway the debate. It's nonsensical if you

understand the safeguards that are in place. None of our weapons are on “hair-trigger” alert, but they are, necessarily, on alert and postured to be executed quickly should the force receive orders from the president to do so. What is often forgotten is that the president does not have to launch under attack.

But the fact that he can contribute to the effectiveness of the deterrent, and that’s really important. God help us if we ever have a president who comes in and says, “I wouldn’t launch under attack,” because he has just neutralized the effectiveness of the land-based leg of the triad. No president has done that, because once they are briefed and understand the value of it, they understand that that would be a mistake for the United States of America.

One final point on ICBMs. Why on Earth we would suggest unilaterally to decrease our strategic forces is beyond me. If you’re about arms control and negotiations, you don’t walk to the table weak. You walk to the table at least at parity and preferably in a strong position to ask your adversary to reduce, if that is your objective. The Russians would love to see us unilaterally reduce before we come to the next round of negotiations. They’d love to see us come to the table weak. That’s not the way we should negotiate.

Before I go to costs, let me touch on the bomber leg and the LRSO. There have been articles written to suggest that the LRSO is destabilizing. You just heard my definition of strategic stability. You don’t invite a first strike, and there is ample evidence that cruise missiles do not invite a first strike. We’ve had cruise missiles at least since the Hound Dog off the B-52 and the Regulus off submarines are two early examples..

They’ve never invited strategic attack, so they’re not destabilizing whatsoever. And to pile onto the reasons Bob mentioned for why the bombers are so important to us today, I will add the hedge factor. Today, because of START counting rules, we only count our bombers at one each, not by the weapons they carry. If tomorrow we were to get a report that there was a technical problem with the Ohio-class submarine, with the nuclear power propulsion system for example, that was feared to be generic in the fleet and a hazard to the crew, and we could not sortie them, and put them on alert, we would immediately, overnight, lose a significant portion of our deterrent capability.

The only way you can respond to that in a timely manner, because it would take many months to upload our ICBM force, is to upload your B-52s and put them on alert, which can be done in a matter of days. By the way, an uploaded B-52 on alert is as survivable as a submarine on alert, because you can launch them on warning and get them airborne and move them away from the threat.

So, the bomber leg, with its cruise missile capability is a critical part of our hedge strategy. It is the only hedge we have today, because we cannot produce ourselves out of a technical problem in a warhead or a technical problem in the submarine or ICBM force or a rapid change in our adversary’s capabilities. Further, I would also argue that the

cruise missile is one of the most cost-imposing elements of the triad. Even we haven't figured out how to defend against cruise missiles.

The Soviets, in the Cold War, spent a fortune to defend against our B-52 bombers and their gravity weapons. The huge sums of money they spent on their air defense systems, to include their radar warning systems, their fighters and their surface-to-air missile systems, was all for naught when we fielded the ALCM on the B-52. It went down the toilet the day we deployed the ALCM, because they could not defeat it. They could not defeat a single B-52 launching 20 independently targeted cruise missiles from beyond the range of their defenses.

That is called cost-imposition and we have forgotten, I think, quite often that this is an important part of any strategy when you're competing with an adversary. I think cruise missiles are incredibly cost-imposing. And the LRSO will continue in that tradition.

Now to cost. I remember a few years ago when the first cost estimates for the recapitalization of our nuclear deterrent, both for the weapons and the delivery vehicles, were being estimated. An article came out in the paper that said, it's going to cost \$360 billion, and best I could tell, nobody blinked. Another group did a study a little while later and came out and said, the first estimate was wrong, it should have been \$480 billion. Again, nobody blinked. So then, an article came out that said the bill would be a trillion dollars over the life of the upgrade program and of the weapons systems operational life.

Well, that is so disingenuous, first of all as an argument. I mean, you don't go to buy a new car thinking, what is this going to cost me over the life of ownership of that car? You want to know whether you can afford to pay the recapitalization cost for something that is not an optional convenience but an absolute necessity for you to be able to get to work, go to the market, etcetera. Well, we absolutely need the deterrent. So, it's disingenuous to roll in the total lifecycle cost of the deterrent beyond the recapitalization costs as an argument for not recapitalizing.

And, these cost estimates seem to include the fact, as Bob pointed out, that 95 percent of the use of the bombers is for conventional missions. So you're getting a two-for on the bomber leg.

But, for the sake of argument, I'll even give the estimators a trillion dollar costs amortized over 40 years. If you do that math based on a \$600 billion annual DOD budget, it's four percent of the budget per year for something that, as Bob said, is fundamental and job one for National Security. At \$700 billion, which our current budget is hovering around, it's 3.5 percent a year. We can't afford these things? I beg to differ. They are imminently affordable. We cannot afford not to have them.

When I hear affordability arguments I like to consider the U.S. economy as compared to our adversaries. If one is to believe Google, the U.S. GDP in 2017 was

\$19.4 trillion. Russia's was \$1.58 (trillion), a mere eight percent of the U.S. GDP. And somehow Russia seems to be able to afford a nuclear deterrent on the same size and scale as ours. In fact, they just recapitalized and improved all of their delivery system and they continue to produce new weapons, which we unilaterally restrict ourselves from doing.

China is growing as well. They're a juggernaut when you consider the rate of growth over the last decade, but their GDP in 2017 was still only 63 percent of ours, and they too are deploying new land-based, sea-based and airborne nuclear capabilities. So the affordability argument just doesn't hold water, in my view. If you add Russia and China together, we still have a higher GDP than the combination.

So, I don't see the so-called affordability issue as pertinent to the discussion. In my mind, it's a priority issue. As Bob so well articulated, when you say something is your number one priority, you fund it, and then you fill in the holes with everything else that you have left, which are many other important programs in the Department of Defense.

Two more things and then I'll close. I was reading a little bit of history of Dr. James Schlesinger the other day. He was such a thoughtful guy, and I know Bob had the chance to work with him and I did too. What a blessing to have had the opportunity to sit in a room with that gentleman and hear him think. And here is what the article recounted.

After World War II we made a dramatic reduction in our conventional forces in Europe. This was deemed an acceptable posture because we were the only ones with a nuclear weapon in 1945. Then the 1950's come along and the Soviets detonate a nuclear device, and we have a choice to make.

Are we going to send armored divisions back to Europe in the massive numbers that we had during World War II to deter and defend against a possible Soviet attack with the Warsaw Pact through the Fulda Gap, or are we going to do something else? Through the '50s and early '60s, the calculus was that since we were so far ahead of the Soviets in our strategic deterrent capability that surely the Soviets would not attack conventionally knowing we could destroy their country and they couldn't destroy ours. That was the logic.

In the 1960s Dr. Schlesinger recognized the Soviets had reached parity in their strategic deterrent. He concluded that now we would be the ones that would have to roll the dice if they come at us conventionally in Europe. Would we be willing to trade our entire country for their entire country for the defense of Europe? That calculus doesn't assure any ally.

So, he said we have to do something different. That different thing was the development and deployment of so-called tactical nuclear weapons, better described as low yield theater nuclear weapons, which we hung on just about every type of fighter we had in Europe. We even went so far as to develop nuclear artillery rounds, backpacks,

land mines and short-range missiles for the United States Army.

To do what? To do nuclear war fighting? No, to deter. To deter a conventional invasion on Western Europe. I'm not sure we're not drifting into this area today again. There is certainly parity in the strategic deterrent, but now look what are the Russians doing?

They are also building theater nuclear weapons capabilities at a rate and a quantity that gives me pause, and in a time period where we self-restrain ourselves, self-restrict ourselves with policy. I think that's doing a disservice to any future president who is presented with the possibility or the actual inevitability of first use of a theater nuclear weapon against U.S. forces.

You don't want to just give that president "sledge hammer" options to deter. Sledge hammers sometimes aren't credible weapons. Again, we need this capability, in my view, not to conduct nuclear war fighting but to deter any adversary who thinks it would ever be acceptable to us to use a low yield weapon on a battlefield, whether they're winning or losing. I don't care what their excuse is for using it.

We say low yield. Again, I'm a numbers guy. A quarter kiloton, .25 kiloton artillery round is not very big, right? Hiroshima was 10 kilotons and Nagasaki was 20 kilotons. By today's standards they are considered small weapons, and a .25 kiloton weapon may seem insignificant in comparison. But the reality is, such a theater weapon has the destructive power equivalent to 500,000 pounds of explosives going off instantaneously over your formation. It's the equivalent of 250 2,000 pound Mark 84s raining down on your battlefield forces at one time. And oh by the way, if it was delivered in an artillery round, guess what's coming five minutes later? Another one, and another one.

There are those who would say we should never consider responding with a nuclear strike in retaliation for a nuclear first use perpetrated by our enemies against our soldiers, sailors, marines and airmen in the field. I say, tell that to the parents of those men and women. It's ludicrous to say that we would never do that, or suggest we should never do that. When you say that you actually incentivize first use against our forces rather than deter the first use, and that's what this is all about, deterrence.

Lastly on the notion of adopting a no first use declaratory policy, I think that's the singularly most dangerous proposed policy I've heard of late. We want to always create enough uncertainty in the mind of our enemy of what we might be willing to do to be able to effectively deter them. It is better for them to believe that in certain circumstances we just might go first. Certainly our allies want to hear that, because if you have a no first use policy you're saying you're going to let the Russians roll all the way to the North Atlantic in a conventional fight and not do anything about it?

If you're the Japanese, are you going to say you're going to let the Russians come south from the Kurile Islands all the way to Okinawa, and if we're losing you're just

going to let us lose? What's the point of the U.S. umbrella? A declared no first use policy would most certainly do damage to our non-proliferation program. Dangerous words, "no first use." We should not contemplate -- well, we should contemplate everything, but in this case we should not do it.

Thanks very much, we'll open it up for Q&A.

(Applause).

Bob is taking all the hard ones, remember.

MR. DAVE ANHOLT (ph): (Off mic) -- not giving things up at the negotiation table.

GEN. CHILTON: Before the negotiations.

MR. ANHOLT: Right, right. And so all of these decisions are made above your pay grade, as the commander of STRATCOM. So I have a general question for each of you. What was the robustness of your relationship with the national command authorities, whoever they were while you were serving, in terms of the fact that you guys are considered wizards in this business?

In my mind, the people that have to really know about this stuff in a very important way are the national command authorities. Whereas your full-time job is this, these political people -- to what degree did you have a wonderful relationship with them so that they understood these things well enough to give you a legal order, and understood these things well enough to not give things up before the negotiations?

GEN. CHILTON: I think you started with Bob. But first of all, actually whether or not you're going to follow an order to determine whether it's legal or not is totally on you. You don't go ask your boss, are you sure that's a legal order? I guess you could say, boss, I'm not sure that's a legal order and have a dialogue on it. But that's totally on everyone from airman first class to four-star general. None of us are taught to follow an illegal order, in fact we're taught not to follow illegal orders. So that's an awesome responsibility to hold.

I was blessed when I was the STRATCOM commander to have Bob Gates as our secretary of Defense, and Secretary Gates got deterrence. He understood where we were at that time, the things we needed to do, and the recapitalization efforts certainly that needed to be done. So I had someone who I could work with directly. I had a button on my desk that said, SECDEF, which I think I may have pushed once just to see if it worked.

I had a relationship with him, briefed him on the war plans, etcetera, etcetera, and I felt he totally understood the issues surrounding the nuclear deterrent. Look, the president has got a lot on his mind, right? That's why he has a secretary of Defense, a

secretary of State, Treasury, etcetera, and he relies on that cabinet and that talent to bring him good advice along the way. Part of that is education, and so that happens.

One final thing I'll say is I remember General Larry Welch told me this once upon a time back in the Cold War, he would do two things as the commander of then-Strategic Air Command. He said, no matter what the exercise was they were conducting at the headquarters, he said he wanted the exercise, no matter what the scenario drove, to end with the biggest response we could possibly give on the Soviet Union. Why? He said, he wanted airmen to be conditioned to execute that order and in doing so, he enhanced our deterrence posture and demonstrated our will.

The easier thing would be to shoot one, okay? So it was the conditioning of the most difficult thing they had to do. It was not the most likely thing they had to do, but it's something that the adversary had to believe they could do.

The other thing he said was that he never wanted the actual president of the United States on the loop in the exercise, because you don't know what they're going to say. That's important as well, and that should be retained for crises, not for exercises.

GEN. KEHLER: I would tell people this is a little bit like going to Thanksgiving dinner and finally getting to sit at the adult's table. You get, I think, one chance to sit there. So, how you frame your military advice, how you develop the interactions with the people that work on this side of the river, both at the White House and here on the Hill and inside the Pentagon, I think is critical to being able to have a credible voice at the adult's table.

So, I would take my experience to three different places. As the deputy commander of STRATCOM I got to experience some of that, because as the deputy you get to participate in some conversations when the commander is not there. The commander of Air Force Space Command, interestingly and I think uniquely among Air Force major commands, gets to do some of that because of space.

But being a combatant commander is unique in that the chain of command is you, the secretary of Defense and the president. So the combatant commanders get to interact with the POTUS. You get to interact with the secretary.

I had three of them during my tenure: Dr. Gates, Secretary Panetta and then Secretary Hagel. So there was a little bit of a churn there, but I had a great relationship with all three of them. I felt like they listened. The three of them made a point of seeking the advice, themselves, of the combatant commanders.

I had a great relationship with the OSD staff, the policy staff, and a great relationship with the people at State. Frank is here, and those great human beings that do the work of arms control and other things at the State Department have a very, very difficult environment, and they're not always the most greatly loved people around town here, but they do something incredibly important. I had a great relationship with them.

I felt like my advice was sought and it was listened to. Was it always taken? No. Would I expect it would always be taken? No. But I felt like every time I was asked to contribute to the conversation that I was contributing something that was seen as valuable. A lot of that was due to the human beings that were involved. It's always an interpersonal relationship thing, but I felt very comfortable. Mostly I felt very comfortable that if we ever came to this kind of extremis situation, that my advice would be sought and that I would be able to render it.

MS. MICHAELA DODGE: Sir, Michaela Dodge from Heritage. Thank you so much for excellent presentations and sharing your great insights with us. As commanders of Strategic Command have you ever had a moment -- looking back, have you had sort of a career regret in wanting to prepare going forward for the debates we're having today?

GEN. KEHLER: I don't have a regret per se, but there are two things that I would say. One is it wasn't a regret for something that I did, although others might say they regretted the things I did. My kids, for example, would probably tell you something. But I regretted the lack of broad expertise of this expertise broadly distributed.

I thought before me, before Kevin, there was work going on from our predecessors to try to foster young minds getting back in the nuclear business, because people had turned their back on that for quite a long time. That whole cottage industry that was affiliated with the Cold War, your think tank and others by the way, and in lots of places people were thinking about these issues all the time, and that largely went away. So, I regretted that.

The other thing, and this is not just about the nuclear thing, but here's something since I've retired that I've learned. I do a little bit of stuff with industry. I'm on a couple of corporate boards. I wish I had known then what I have learned about industry now.

The reason for that is I think there is a great lack of understanding between the people who wear uniforms in the Department of Defense and industry. I think we think we understand one another, but we don't, and I think that leads to far less fulsome dialogue than what we actually could be having. So now, having seen this on both sides of the fence, I think I would have been a better commander at Air Force Space Command, for sure, because that's an organize, train and equip kind of an organization, and I think I would have been more effective had I known then what I know now about industry.

GEN. CHILTON: I would agree with the same points. People would come to me and say these industry people want to come and talk to you because they want to know what your position is, and I would say, don't they listen to my speeches? I'm very transparent.

But in reality, that's not enough. A speech isn't dialogue, and I would agree completely with what Bob said. I'd have spent more time, as the commander of Space

Command, not necessarily at STRATCOM.

At STRATCOM, Bob and I, I think, were committed to the same mission, which was the elimination of ignorance from the debate. I always say ignorance is not the fault of the ignorant, although that can be debated given how easy it is to Google things today. But be careful what you read there.

Really, it's the responsibility of the teacher to remove ignorance from the student. You can't fix stupid, but you can fix ignorance. And so if I could go back to being the STRATCOM commander, and I don't feel like I didn't spend time doing this -- I'd have spent more time doing it.

One of the things I'm most proud of as the commander of STRATCOM was that when I first got there we had a space symposium. I said, we've got three missions here. We've got cyber, space and deterrence. Do we have a deterrence symposium? No. We started that and it continues to this day.

I said the target audience of this deterrence symposium is not contractors, it's not to sell anything, it's not to lay out requirements. It is to educate the 05s and the 04s in the audience from the United States Navy, the United States Army, Marine Corps and Air Force.

I just think, as Bob articulated, it's a great responsibility and a huge regret. I'd have done more. I'd have done more of that, more speaking on this subject, on all three of those domains, frankly, all three of those mission areas.

MR. : (Off mic) -- Eisenhower said it shortened the war by two years. Fast forward 67 years later -- off mic). So technology is going to outpace policy. The Air Force, piloted aircraft, remotely piloted aircraft, technology will outpace policy in the future. We're going to have unmanned aircraft. We're going to have artificial intelligence. We're going to have kinetic weapons in space. So given the knowledge -- (off mic).

GEN. CHILTON: I don't know the answer to that other than leaders need to pay attention to technology. They need to have -- this is why it's important to have young people on your staff across the spectrum, because they actually may know more than some of the old people on your staff about what's around the corner and what's coming.

But I don't know that there has been a time in history where that was reversed. Maybe in 1925, during that time period in the mid-'20s when the great thinkers on airpower and strategic bombardment gathered to envision something that hadn't been invented yet, an airplane that could fly long distance and carry a lot of bombs and defend itself. That was ultimately proven in World War II and led to the formation of our United States Air Force as an independent arm. But nothing else quite jumps to mind.

GEN. KEHLER: Let me take a little bit different tack here. I think the

technology that resulted in nuclear weapons changed everything. I agree with Kevin completely in that regard. In August of 1945 something happened that changed everything.

Prior to that no technological invention that was applied to war fighting or national security prevented World War I or World War II. No machine gun, great white fleet, aircraft carrier, submarine, B-17, nothing, to include the widespread use of chemical weapons in World War I did not preclude World War II. Something happened in August of 1945.

And so every president since 1945 has said, we ought to get rid of these things, except for President Reagan who said we ought to replace them with something. My view is we will continue to rely on nuclear weapons as the foundation of our deterrent because of the awesome effect that they can have, the uncertainty that surrounds that, the fact that nobody has ever done it, until something comes along to replace them in deterrent value. And right now, even with artificial intelligence and autonomous vehicles and every other thing that you talked about, I don't see it. I don't think anything else brings leaders to the point where they say, that's too much risk.

We use as a throwaway line -- and there are people here who are part of the operating forces today -- it is not uncommon for a commander to stand in front of the submarine crew, the bomber squadron, the missile folks about to go out for their alert tour, and say something like this. We give you responsibility that no other military has had in the history of the world. Under your direct control is more firepower than what was applied in all of World War II.

All of that is true, but the deterrent value isn't in the fact that you can apply that much military power. The deterrent value is you can do it in the next two hours. And nobody has ever faced that before, no society, no nothing. That is the big stopping point for leaders.

You assume they're rational. An irrational actor is going to be an irrational actor. But the rational countries that have nuclear weapons today, and I believe there's rationality in all of them to include, at some level anyway, North Korea.

That's the chasm that we get to. You get to that point and you say, is this worth the risk and the cost? So far, at a major power level, the answer has been no. I don't see what changes that equation in technology or technological advances.

Maybe a really, really, really high confidence missile defense system. That's what Reagan said. Reagan said, I'm going to replace these things with perfect missile defense. Everybody went, yeah, except for the technical experts who said, we don't know how to do that.

I love them today, and they say, yeah, but get them in a quiet moment, and some of you do this, and they don't know how to do it. So, we'll see how that unfolds, but my

humble view here is, I don't see a replacement for nuclear weapons deterrent value as far out there as I can see. I hope I'm wrong.

GEN. CHILTON: If that was your point I missed that part. I agree completely. There's no technology I see on the horizon in anything that you mentioned that strikes fear in the heart of decision-makers like a nuclear weapon.

MR. : (Off mic) -- space-based?

GEN. CHILTON: Maybe, I don't know how. I don't know. But it doesn't scare me, and I consider myself a rational actor.

MR. HUESSY: On behalf of the Mitchell Institute and our sponsors and guests, you both have given extraordinary speeches before, but these are two of the best. I want to thank you on behalf of all of us. You've done a great deal to teach us again the value of nuclear deterrence. General Chilton and General Kehler, thank you.

(Applause).