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P R O C E E D I N G S

MR. ROSE: My name is Frank Rose, and I'm a senior fellow at the Brookings Institution, and I will serve as the moderator for today's event.

Now, the Biden administration is preparing to undertake a major review of U.S. -- of the U.S. Strategic Nuclear Modernization Program, as part of a broader review on nuclear policy. The Strategic Modernization Program began during the Obama administration, and was continued by the Trump administration. Supporters of the current program argue that its implementation is critical for the United States' ability to effectively deter adversaries and reassure our allies. On the other hand, opponents argue that the current program is well in excess of deterrent requirements and is unaffordable over the long term.

So, what should the Biden administration do? Well, we have a great group of experts with us today, to help answer this question. Our panelists include, Tom Collina, director of policy at the Ploughshares Fund, Madelyn Creedon, an nonresident senior fellow, here at the Brookings Institute, Frank Miller, a principal, at The Scowcroft Group, and Amy Woolf, a specialist in nuclear weapons policy at the Congressional Research Service.

Let me now lay out the plan for today's event. I'll spend about 40 minutes posing questions to the panelists, on the various aspects of the Modernization Program. Following that, we'll take a few questions from the audience. If you would like to ask a question, you can either email that question to us, at events@brookings.edu, or tweet us at #SecurityStrategyTech.

So, on that note, let's begin the program. Before we get into the specifics of the Modernization Program, I'd like to begin by placing the program in the larger geopolitical context. So, my question is as follows, I mean, given the current and emerging security environment, what role do you envision nuclear weapons will play in international politics in the near to mid-term? Specifically, do you believe nuclear weapons will play a reduced or expanded role, in the geopolitical environment? Frank, why don't we begin with you? The floor is yours.

MR. MILLER: Thanks, Frank. I believe that nuclear weapons are going to play an

expanded role, compared to 10 years ago, or even five years ago, and that's because the world has changed. The Biden administration's National Interim Security Guidance said, and I quote -- just issued yesterday. "We cannot pretend the world can simply be restored to the way it was, even four years ago." close quote. And the United States today faces a major strategic challenge from a Biden document, Destabilizing Russian Federation and Biden document Assertive PRC.

Those countries are ruled by aggressive and bellicose leaders, who've demonstrated a willingness to take risks, and in Russia's case, have threatened nuclear attack, over the last decade, to intimidate our allies. Both Xi Jinping and Vladimir Putin believe their nuclear arsenals have great value, and they, consequently, have been engaged in a major modernization effort, of those arsenals, for the past eight to 10 years. Putin and his Defense Secretary, Shoygu, have both made statements, that Russian Forces are now 90% new. But China, of course, is opaque, but the Chinese force is growing.

But each autocrat, Presidents for Life Xi Jinping and Vladimir Putin, also realize, they each realize, that in over an attack on the United States, or our allies, involves the risk of escalation, to nuclear use, and this has introduced an important degree of caution in what they do, vis-à-vis, ourselves or our allies, and I believe that nuclear backdrop, really, the nuclear backdrop for anything we do with our forces around the world, is so critically important to inducing more risk on their part.

But to do that, it requires us to have a modern credible deterrent, in order to demonstrate to them, and to our allies, that we have the capability and the will to deter attacks. Modernization is a key demonstration of will and of maintaining capability. Let me make two file points. The first is, as you will have noted, from remarks made recently, by General Hyten, the vice chief of the Joint Chiefs of Staff, vice chairman, we need to begin expanding the way we think about deterrents. Russia and China have separately developed an integrated approach to war in the 21st Century, bringing together, under one hat, plans for gray area, space, cyber, conventional, and nuclear forces.

And we need to appreciate and understand what they are doing and examine our own approaches, to ensure that we can deter effectively, across the full spectrum. And finally, I'd note that the Biden administration document, issued yesterday, calls on the United States, or says -- states that, the

United States will reduce the role of nuclear weapons in our National Security Strategy, and, sadly, I will note, that the last time we did that, was in the Prague Speech, and remember how that turned out? The United States, the United Kingdom, and France reduced the role of nuclear weapons in their respective national security policies, while Moscow and Beijing increased the role of nuclear weapons in theirs. So, that, I think, is -- is what we are facing for the next -- the next five to 10 years. Why don't I stop here?

MR. ROSE: Great. Thanks very much, Frank. Let me open it up to the other panelists. Madelyn, Tom? Tom, why don't we go with you, and then Madelyn, if any -- you have anything to add. Folks, unfortunately, Madelyn is having some Wi-Fi issues, so, you're not going to be able to see her on the screen, but she is connected with us, via phone. Tom, the floor is yours.

MR. COLLINA: Thanks, Frank, and it's great to be here with everyone on this esteemed panel. I really appreciate the opportunity. I just wanted to give it, maybe, a different perspective on -- on where we might be going with Nuclear Policy, over the next decade or so. I co-authored a book, last year, with former Secretary of Defense Bill Perry, in which we laid out a new nuclear policy for the Biden administration, as it turns out, and a key part of that is the recognition that, since the Cold War, U.S. policy has been focused on the wrong threat.

And what I mean by that is that our entire nuclear policy is based on deterring a surprise attack, from Russia, a so-called "bolt from the blue." But a surprise attack would be suicide for Russia, as I think everyone on this panel would agree. Russia knows it, and so, to me, to us, it's not a realistic possibility. But what is much more likely, we found, is that we might blunder into nuclear war by mistake, due to a false alarm, a cyber-attack, or an unstable president, and I don't think people will soon forget the concern caused by an unhinged President Trump, with his finger on the button, not so long ago. So, I would just offer that we need to be paying more attention to preventing accidental war, in the years ahead, and I'll leave it at that.

MR. ROSE: Thanks very much, Tom. Madelyn, Amy, anything you'd like to add? Go ahead, Madelyn.

MS. CREEDON: Thanks, Frank. No, I mean, I would say, I probably am somewhere in

between, thinking about how we go forward, because we do need to worry about arms control, but we have to be very realistic, as we approach this new environment. So, clearly, the emphasis that Tom mentioned, that used to be on the bolt out of the blue, the massive assault out of the blue, I mean, we really haven't been in that position for quite some time. So, we are in a situation, where we're probably looking at a more likely use of nuclear weapons, in some type of a conflict, but at a much lower level. So, I think it's a very different environment. Okay.

MR. ROSE: Great. Thanks, Madelyn. Amy, anything on your hand?

MS. WOOLF: Yeah, I agree with Madelyn, I'm somewhere in between here, that the reality is the threats have changed, and we are not looking at solving the same problem we were trying to solve 25, 30, 50 years ago. But the problem isn't solely that we might blunder into nuclear war because things have postured in a certain way, but that adversaries might see some value in engaging in risky behavior, that might also lead us to blunder into nuclear war, or they may do it intentionally, but the world is such that there are needs to have both hardware and software solutions to what we're trying to do, and I think, the divide and the debate is often amongst those that we -- think we can solve the problem of how the world is evolving, by fixing force structure or fixing weapons systems, when there's a much larger risk reduction, and modernization, and arms control, a lot of tools in the toolbox, and the debates seem to divide amongst just a couple of the tools, and it's worth remembering that, in the academic literature and a lot of the thinking, there's a much broader toolbox, to address some of the concerns that Tom mentioned, and I'm sure Frank has, as well, about the pathways to clear conflict.

MR. ROSE: Great. Thanks, Amy. And I see a two-finger from Frank. So, Frank, the floor is yours.

MR. MILLER: Just briefly. I just want to say, I hope what I said wasn't interpreted as being worried about the bolt out of the blue, although that's something that we can't totally discount. I think there is a risk of blundering into war because I think Xi Jinping and Vladimir Putin are aggressive and could potentially believe that we would not respond in a theater situation, and that theater situation could, itself, get out of hand. So, I think a blunder, on the part of either Moscow or Beijing, is something

that we absolutely have to worry about, as a first order of priority. Thanks.

MR. ROSE: Great. Thanks so much, Frank. Well, let's start getting into the guts of the Modernization Program, with a focus on U.S. nuclear delivery vehicles. Probably the two most controversial elements of the current Modernization Program seem to be the new intercontinental ballistic missile, formerly known as the Ground Base Strategic Deterrent, or GBSD, in the new nuclear cruise missile, formerly known as the Long-Range Standoff Weapon, or LRSO. Tom, you've been a pretty vocal critic of both of these programs, and, you know, that comes out in your book, so, would you mind sharing, with the audience, your key concerns about GBSD and LRSO, and then I'll turn it to the other panelists. So, the floor is yours, Tom.

MR. COLLINA: Thank you, Frank, again. And in the interest of time, I'm just going to focus on the ICBM because, frankly, I think it's more important, and I'll leave the Cruise Missile to Q&A, if -- if people have questions about it.

You know, look, there's strong agreement around rebuilding the submarines, and the bombers, for the future. We can argue about how many we need, but this is not a question of all or nothing, it's a question of how much is enough. The question is, how can we maintain deterrence, for less? And when it comes to rebuilding the ICBMs the Land-Based Ballistic Missiles, I would make three points.

First, ICBMs are redundant. In fact, we should not call this the Ground-Based Strategic Deterrent because it is not needed for deterrence, which is assured by our submarines at sea, and, you know, just ask yourself, if we had no ICBMs, at all, if I could just snap my fingers and have them go away, would Russia still be deterred from attacking the United States, and the answer is, of course, they would. Just one of our Trident Subs, at sea, could wipeout the 50 largest Russian cities, and we have 14 Subs. So, why do we need ICBMs? I don't think we do, and that's the question we should be asking.

Second, ICBMs are particularly dangerous. I mean, look, all nuclear weapons, of course, are tremendously dangerous, but ICBMs are particularly so because they increase the danger of starting nuclear war by mistake, in response to a false alarm, and, look, we've had false alarms in the past, and I

think they're more likely now, in a world of cyber-attacks. And any president, and in particular an uninformed or unstable president, might think an attack is real, when it's not, and if we don't know if an attack is real, then we should never launch ICBMs on warning, before that attack lands, because if we do, then we've started nuclear war, which I think I the greatest nightmare, that nobody wants to get into. So, from this prospective, ICBMs are simply a catastrophe, waiting to happen.

Third, the ICBMs are tremendously expensive. The Pentagon estimates $264 billon, so, a quarter of a trillion dollars, over their -- over their service life, and the intended use case, the best use, for them is to be destroyed in the ground. That is, even in a nuclear war, that these weapons would never be launched. That is the official Air Force justification, you know, known as the nuclear sponge.

MR. ROSE: Great.

MR. COLLINA: So, the key question to consider is, how much are we willing to pay, for missiles that will be destroyed in the ground? $264 billion, I certainly hope not, and even if you support keeping ICBMs, we simply don't need a new generation. The existing fleet of missiles, the Minute Man, it's life can be extended, and can be destroyed in the ground for much less than a new fleet of missiles. Lastly, there is no reason to rush ahead with the sole source contract for the new missiles, as the Trump administration set us up to do. I hope that the Biden administration will pause the program and conduct a full review, as I think they are planning to do. And, thanks, I'll leave it at that.

MR. ROSE: Great. Thanks so much, Tom. Let me open the floor up to the other panelists. Who'd like to respond?

MR. MILLER: Well, I guess I will.

MR. ROSE: Okay.

MR. MILLER: I mean, to some degree, yes, the ICBM leg is redundant, but the whole triad is supposed to be redundant. The various flaws, that each system has, offset each other, and so, you can't wipe out the triad in a single blow. I guess I point out, first of all, that we don't really have a triad today, on a day-to-day basis. The bombers are off alert. So, we basically have ICBMs and SLBMs, and if something happened, if there was an issue, with the SSBN Force, we rely on the ICBM Force, until we

can fix that -- that issue.

I understand Tom's point about false warning, but what I would say, first of all, is we haven't had a false warning episode since the 1980's, or since 1980, twice in the Carter administration. And, second, if an enemy contemplates trying to take out the ICBM Force and puts 800 Warheads in the air, that's -- that's a clear indication that we're under attack. It's not a false warning. Getting rid of the ICBMs allows the potential enemies to focus on antisubmarine warfare. The cost that Tom talks about is amortized over 50 years of service life, and that's -- that's a long time. I mean, we always get sticker shock, if you look at weapons systems with multiple decades of service life.

And everything I've seen says, that we cannot extend, life extend, again, the Minuteman-III. It was put in the ground in the 1970's, the missile's 50 years old. It's going to be 60 years old, by the time GBSD comes into play. So, again, the argument is fairly put, it's do you believe in a triad, and do you believe the ICBM leg is -- is necessary? Tom and I aren't going to agree on that. He doesn't believe it is, and I believe that the ICBM leg is a critical part of the triad, that we have today and in the future.

MR. ROSE: Madelyn? Thanks very much, Frank. Madelyn?

MS. CREEDON: I just want to make a very quick point, and that really is with respect to whether or not we can extend the life of the current fleet of Minutemen-IIIs. This was something that was looked at, extensively, at the end of the Obama administration, and even though there was, I would say, a lot of desire to do this and avoid the cost of the new system, at the end, we concluded that it really wasn't -- it really wasn't possible, that these really have reached the end of their life, and they -- and if we're going to have ICBMs, they have to be replaced.

MR. ROSE: Great. Thanks so much, Madelyn. Tom, back to you.

MR. COLLINA: Just to respond on the Minuteman-III extension issue, I mean, I've talked to other people from the Obama administration, who -- who determined the opposite, Madelyn. So, with all due respect, I think there's a disagreement, even from people coming out of the Obama administration, of whether the Minuteman-III can be extended. I would quote Lieutenant General Richard Clark, the Air Force's deputy chief of staff, who testified, just two years ago, that the Minuteman-III has one more life

extension in it, and Rand came out with a report, saying that the missile can be extended.

So, I think, there seems be some -- some legitimate disagreement on this, and what I would recommend is, if people don't agree, let's do a study. Let's -- we have the time. I don't think there's a rush. Let's do a study and get an independent view, on whether Minuteman-III can be extended, and then we'll have more clarity.

MR. ROSE: Amy, anything you'd like to add? Great. Well, you know, there's -- let me kind of move to the next part of the Modernization Program. There's generally a lot of talk about the DOD delivery vehicles, but not so much focus on the nuclear weapons infrastructure, which is managed by the U.S. Department of Energy. Madelyn, you know, as the former principal deputy administrator of the National Nuclear Security Administration, I'd be interested in hearing your thoughts, about what you believe should be the Biden administration's top priorities, with regards to nuclear infrastructure?

Additionally, in that context, what's your assessment about the future of the W-93 Warhead Program? Do you think the Biden administration should continue the program? And what implications does that have for our relationship with the United Kingdom? So, the floor is yours, Madelyn.

MS. CREEDON: Well, first, let me take the W-93 first, very briefly. Certainly, the Biden administration should look at the W-93. It is certainly very integral to our relationship with the United Kingdom, but it's also important to the Navy, as it looks forward to new Columbia-class, and future, well, future successors to the D-5, but even as the D-5 life extension goes forward to the D-5, but it is certainly something that, I think, the Biden administration should look at and should make a determination for itself.

But moving on to infrastructure, I think one of the problems with the whole infrastructure discussion is we don't look at it broadly enough, and infrastructure, really, is everything. It's people, it's production, it's nuclear command and control, it's the science infrastructure, it's the experimental capabilities, it's computational capabilities, industrial-based, materials, sustainment, spare parts, software, transportation, it's absolutely everything. It's everything that underpins the deployed delivery systems, and we know that certainly, over the last 10 years or so, Russia and China have certainly focused on their own infrastructure.

Russia has significantly improved and expanded its infrastructure. China has done the same, although, obviously to a much lesser degree. And what we have now, as a result of those, is, you know, we have two -- two countries who are fully capable. They have capable production infrastructures, they can produce warheads, they could produce delivery systems, be forced to meet their own requirements, and they're expanding.

So, China's going to, most likely, double or triple its nuclear warhead count, over the next decade or two, as it moves to a triad. Russia, also, has deployed a number of new delivery systems, and they're focused, one would argue, probably more now, on the non-strategics, but they can produce hundreds, thousands of warheads, and we're still in a situation, where we're doing life extensions, with reused parts. We don't have the capacity to re-manufacture pits, or at least even to support LEPs, and there's a lot to be done on some of these other things, such as NC-3, particularly the space leg, and the early warning.

President Biden's guidance, clearly, as Frank mentioned, talks about the security environment isn't the same as it was four years ago, and of course, it's certainly not the same as it was when President Obama gave his Prague Speech. The question now, becomes is, is the U.S. late? Probably not, but we don't have any time to spare, I would argue, in this infrastructure. That can, that we have been kicking down the road for a number of years, well, it's -- it's flat, right now, we've kicked it enough, and the road is at the end, and so, we have to really get back to, what is it that we need, across the board, in U.S. Infrastructure?

And specifically, when you look at DOE, and the NNSA, we have to be able to produce warheads, and when I say produce warheads, I mean LEPs or anything else that we may need, be it newly -- newly manufactured pits, remanufactured pits, new secondaries, remanufactured secondaries. We have to produce materials, like lithium, and tertium, eventually enriched uranium, and maybe even highly enriched uranium, that's still a very open question. But we also need a strong science infrastructure. We have to keep going, so we understand how to maintain our systems without testing, and, yes, we even have deal with pits because, when we look at where Russia and China are headed,

they've clearly prioritized their infrastructure budgets, modernization budgets, and we haven't. We debate every year.

So, should the Biden administration relook at all of this? Yes, but we have to have a modernized infrastructure. We have to have a modernized infrastructure that is fully capable, and it has to be flexible, and it has to be that way, not only to support the deterrent, but also to support wherever we go with arms control or other agreements, and we need this infrastructure to support nonproliferation, counterterrorism, and as President Biden said, in his new interim guidance, our nuclear deterrents will remain safe, secure, and effective, and our extended deterrents commitment to our allies has to remain strong and creditable, and to do that, we need a robust and fully functioning infrastructure. So, we kind of just need to get on with it. Over.

MR. ROSE: Great. Thanks, Madelyn. You know, the point you made, that, you know, the nuclear weapons infrastructure doesn't just support the actual weapons, but the verification technologies, I fully agree. When I was assistant secretary of state for Arms Control Verification and Compliance, one our best partners were the National Laboratories, I mean, they are really at the cutting edge of the future of nuclear security. So, let me open the floor up to other panelists, if they'd like to add. Tom, the floor is yours.

MR. COLLINA: Thanks, Frank, and thanks, Madelyn. You know, I would say, once again, the question is not all or nothing. Of course, we need -- we need some infrastructure, and some of that infrastructure needs to be improved and rebuilt, and -- but the question, again, is how much is enough?

And when I look at the National Nuclear Security Administration, and the plans they have for new nuclear warheads, frankly, I think it's simply out of control. And, in general, we should not be designing new warheads, that deviate, significantly, from our nuclear testing experience, and that increase the chance that we might have to resume full-scale nuclear testing in the future, that's simply a risk, that I think is not worth taking.

Yes, we should be refurbishing existing designs, but not introducing new designs, and

when you start looking at all the different programs that are on the books right now. For example, a refurbished or a new warhead, I would consider it a new warhead, for the new ICBM, again, a multibillion-dollar program, for a new warhead to be put on a missile that will be destroyed in the ground. Do we need that? You know, I don't think so. The W-93, a new warhead for the Submarine Launched Ballistic Missile, look, we already have two warheads, for that missile, that have been life extended, and are in perfectly good shape. Why do we need a third? No one's made a compelling case, to me, and again, in terms of infrastructure, yes, we need to be able to produce pits. To me, the capacity that we have, or could have, at Los Alamos, is enough, and we shouldn't be expanding onto additional sites, at Savannah River.

MR. ROSE: Great. Thanks, Tom. Frank, the floor is yours.

MR. MILLER: Thanks. Let me confine my comments to the W-92. Let me endorse what -- what Madelyn said. I mean, you go to some of the -- the nuclear sites today, and stuff is falling out of the ceilings, the ceilings -- the concrete is -- is unstable. So, we have deferred that, and Madelyn is right. Let's talk for a moment about the submarine force, which is the backbone of the deterrent. And there are three parts, really. There's the submarine, the missile, and the warhead. We're building a new Columbia.

The D-5 Program needs to continue to expand in a cycle called the D-5 Life Extension 2. Congress hit that really hard last year. That was a foolish thing to do because the system has to continue to evolve in a spiral manner, so that in the 2030s we're not facing a GBSD situation, where you have to start with a whole new missile. So, D-5 LE-2 is critical, but let's talk about W-93 for a moment, and I'll try to give Tom an answer, he won't accept it, but this is why we need a third warhead.

First of all, it is important to the United Kingdom, but it is not, as some recent press reports and papers, a joint program. That's not allowed by the Nonproliferation Treaty. We can't have joint program with the United Kingdom. They designed their nuclear physics package, we designed ours, there may be some crosstalk, but they are unique designs. Yes, the British design, if it's based on the 93, would use some nonnuclear parts from the Kansas City Plant, just like the existing British warhead does. That's okay, nothing new there.

But let's talk about the 93. The submarine stockpile we have, today, consists of 75% of W76-1s and 25% of W88s. The 76s entered the arsenal in about the late 1970s. It's had a life extension program, but by the 2030s, the warhead is going to be over 60 years old. The W88, similarly, is not getting a full life extension, but it is, again, by the mid-2030s and beyond, an old warhead. And so, if something happened to go wrong, with the 76-1, and we've had technical problems with warheads in the past, three quarters of your sea-based deterrent goes away.

What we need to do is level set the SLBM Force, for 2030s -- for the 2030's and beyond, by having one third, one third, and one third, one third, 76 ones, one third, 93's, and, oh, by the way, there's nothing that says the 93 is going to be a new warhead. The Department of Energy has only asked for a feasibility study to start this process, so, one-third, 93, one-third, 88, one-third, 76. And for those people who opposed the TBST, they ought to be on board with the 93 because the -- there is nothing more important than making certain that the SLBM force is always ready to respond. So, there's a very good rationale for this. It's not a new warhead, it is not breaking the Nonproliferation Treaty, and we -- we need to get on with it. Thanks.

MR. ROSE: Great. Thanks so much, Frank. Amy, the floor is yours.

MS. WOOLF: Not much I can add on what we should or shouldn't do here because it's not my place. But, first, Madelyn went through a long list of things that make up the nuclear weapons infrastructure, everything from the trucks that provide transportation to the human beings who provide -- who deal the science, and most people who pay attention to the Nuclear Weapons Enterprise forget most of that, and it is all about the hardware.

And when you have debates, in Congress or elsewhere, about what should be done with the Nuclear Weapons Enterprise, two things are always in the underlying nature of the debate, you know, people talk about the warheads, or the buildings, or the pits, but the two top questions that is under the foundation of all of this is NNSA management. There is this strong sense that NNSA cannot bring a program in, on time and under budget, Kansas City notwithstanding.

And the other is that they can't manage in GAO Reports on this, all the time. They can't

manage their program and budget in the long-term, either. GAO puts out studies, all the time, saying, they have this detailed program for what they want to do in the future, but not enough money in the budget to do that. So, there is this ongoing sense, particularly when people are debating how much money NNSA has asked for, that they're just throwing money against the wall and seeing how much will stick.

Now, if you pay attention to their budget over time, you can see that they actually do have a method beyond -- behind that, but public confidence and what they're asking for, both programs and money-wise, is not significant be -- or it has significant problems because of their reputation, and no offense to Madelyn when she worked there, but their reputation is longstanding for being somewhat out of control, and that affects the reaction they get when they ask for money and plan on programs.

MR. ROSE: Madelyn, anything you'd like to add, before we move on?

MS. CREEDON: Yes. Sure. Thanks, Frank. Just two things. One is the whole concept of life extension programs and how they're developed or even in this hybrid zone that we're looking at, if you would, about the W93. It's all developed, both by requirements that are set by the U.S. Strategic Command and then the actual design of the system, that we, as NNSA, in collaboration with DOD, through the Nuclear Weapons Council, and there is -- so, none of it -- none of what is going on now is anything that looks like a new weapon.

NNSA has worked very, very hard to make sure that the concepts that are being developed for the 93 are not new, and that they will not require new testing, in the sense of a return to underground nuclear weapons testing. This is one of the reasons why I mentioned that the science of the structure is also hugely important, and it's so that the NNSA can continue on in this -- in this world, sort of, past life extension, but isn't a world where you go to new weapons. I mean, this -- the science has got to get better. We have to be able to do more subcrits, the project out at Nevada, to be able to develop new capabilities to understand how to do subcrits, to do the new -- the certifications of -- more different, if you will, like, not good grammar, but more different LAPs, that are just not strict reuse, but all of this is why we need this robust infrastructure.

And to Amy's point, yes, NNSA has a terrible reputation, historically, but it is getting a little bit better, and it's a hard case to show, but it's getting a little bit better, but when you look at the construction projects, they are. So, once the DOE order has kicked in, 413, and also the very strict requirements about not moving to construction until the design is 90% complete, this has really helped, but are there going to be technical problems with the life extension? Yep. The 61 was only the second life extension we've done, and it ran into a problem, and hopefully the lesson is learned from that because it's delayed -- it delayed not only the 61, but it delayed the ALT on the 88. So, there's a lot to be done, but that's why people are really an important part of this infrastructure, as well. Over.

MR. ROSE: Great. Thanks so much, Madelyn. Amy, let's come back to you. Amy, you watch Capitol Hill very closely, and I would argue, over the past decade, since the ratification of New START, there's been a fragile bipartisan majority in Congress, in favor of the core modernization program, that was the gun under President Obama. In your view, is that consensus likely to be maintained in the current Congress, or do you anticipate the new Congress, that it will move in a different direction? The floor is yours.

MS. WOOLF: It depends. Is that a good answer? I can't predict how Congress will vote on particular modernization programs, and I obviously can't take any position on those programs, myself, but I think I can provide some insights into how the issues might play out, both in general and specifically for the programs, just by looking at the way things have gone, over the last, as you mention, over the last 10 years, with the consensus, and more particularly with some of the public comments that we've had in the last few weeks, maybe few months.

So, let me do two things. Let me look at those public comments, which will give you a good sense of what's going on, on the Hill, and then I'll get back to the box of the consensus, and where we might go. But I'm going to start with something that Representative Adam Smith said, and he's chair of the House Armed Services Committee, during a program in December. He said that, in his opinion, and I quote, "We're building more weapons than we need, and we need to look at ways to have a robust deterrent and a more cost-effective manner." It sounds like he agrees with Tom. But then he went on to

say, “That’s my vision. It’s not a vision that is supported by a majority of the members of the House or the Senate.”

Second, I want to go to -- oh, and he also said, on the GBSD, he ask the question of whether the third leg of the triad is necessary, but then he pointed that -- out that one of the reasons why you don’t ask that question in Congress is because of the politics of the issue. So, he seems to be agreeing with Tom, but putting the brakes on about whether or not change will come. Senator Reed, who’s chair of the Senate Armed Services Committee, said, in an interview, just recently, that, “the bipartisan congressional support for modernizing the triad is very strong.” That’s the quote. And he said, “It’s certainly an issue that can be debated. It’s just that, over time, it has proven to be an effective means of deterring a nuclear conflict.”

When we turn to Senator Tester, who is chair of the Senate Defense Appropriations Subcommittee, and as people like to note, he comes from one of the states where we deploy ICBMs. He also, in recent interviews, expressed support for the program, but was open to gathering more information about the threats and the needs of the U.S. systems because he’s new to the Defense Appropriations Team. But he said, “Those ICBMs have been an incredible deterrent, and I firmly believe they’re still an incredible deterrent, and we still need to keep them as an incredible deterrent.” Maybe that’s the homeboy speaking.

But, of course, not everyone goes in that direction. Senator Markey and Representative Khanna sent a letter, earlier this week, and they call on the president to do what Tom suggested, which is to pause further development of the GBSD, and look to the -- what they call the viable alternative of extending Minuteman. And the point of these quotes is that I think they pretty clearly tell us there’s going to be a significant debate about the direction of the modernization programs and, particularly, the GBSD, this year. Tom and other NGOs outside government have put on quite a public relations campaign, over the last few weeks, to keep the issue in the public interest, and I think it’s affected the way Congress is looking at what it’s going to debate this year. So, there will be a debate. Of course, the question is, will the outcome be any different than it’s been for the last 10 years? Tom’s smiling, he’s hoping I’m going to

say yes.

So, from the past NDAA debate, you know, Congress, as you said, they've been debating the structure, and the pace, and the scope of these modernization programs for 10 years. So, with at least the core of the programs, those particularly at DOD, the members are familiar with the issues. The Air Force has come up to explain to them why they need the GBSD and the LRSO. The Navy has come up to say, yeah, give us our money for the Columbia Class, we know you like it.

And the debates have been going on for 10 years, and they're pretty comfortable with the terms of those debates. They've also heard the arguments that Tom has -- is making now, but they've heard them before, you know, can we life extend more, are the ICBMs dangerous? So, the issues that are coming up aren't different. The question is, what is different this year? And I bet Tom will say, it's money, that we are in a tight budget environment, and the Pentagon will have other priorities. But that was true in 2012 and 2013, as well, that we had just passed -- Congress had just passed the Budget Control Act, and the money was tight. Congress was looking at -- the Pentagon was looking at restrictions in its funding, for at least 10 years, and Congress still heard the arguments and still supported the programs.

So, what's different this year? I'm not sure. But if you think of the consensus as a box, with all of these programs inside the box, except for those that aren't there yet, what's likely to stay in the box and why is it going to stay in the box? So, that's how I see the consensus, as a box. So, you have the programs that have settled pretty solidly, and rooted themselves, or anchored themselves to the bottom of the box, they are there. They are the ones Congress has approved repeatedly. So, what that would be is, of course, the Columbia Class, the B21, the GBSD, the LRSO, I'd argue even the W76-2 is anchored in the box, and I'm not sure what is going to come up new in the debate, that will lead to a different outcome this year.

On the other hand, you have the programs that Madelyn talked about, the infrastructure programs, at NSA and the W93, and the dog barking. He is attracted to the Zoom call. No, go, go, go. Those aren't quite anchored in the box, yet, in part because they're new to the box. Clearly, NNSA has

asked for pits for years, or for pit production for years, but the new two-facility pit production plan has only been in the box since 2018. So, Congress isn't sold on it yet. Along with their concerns about NNSA management and the studies that have been done about whether they can meet the timing on the plans, it's still open to debate. The W93 is just new to the box last year. So, it's still open to debate, as well. And the main question is why did NNSA accelerate it by a couple years? So, I suspect, when Congress discusses the W93 this year, it will ask that question again. Why did you accelerate it? And it may slow it down again. I don't know, I'm not predicting, but that's the question that's out there.

The last one is, of course, the Sea-Launched Cruise Missile, that the Trump administration put in the 2018 Nuclear Posture Review. That's not even in the box. The Navy has not put any money into the program, except for a little bit of study money. The Navy has not come up to the Hill to explain the program and advocate for it. When the administration released it in the Nuclear Posture Review, they said, oh, yeah, that's seven to 10 years out, we're not sure what we're going to do with it or why we need it. The Nuclear Posture Review's arguments for it were somewhat muddled. So, today, you have reports that Senator Van Hollen and Representative Courtney have proposed legislation that would ban funding for the Sea-launched Cruise Missile. This is a program that's not yet in the box. And if anything's going to be vulnerable in this year's debate, and some other things might be, as well, the fact that it's not in the box, the fact that the explanations for it have not been engrained in the Congressional debates yet, the fact that the Navy's not advocating for it is probably a good reason to believe that that's where your most vulnerable program would be. Again, I'm not predicting what the outcome will be, but because the box is pretty solid, and a lot of things are anchored on the inside, and the SLITHM hasn't even gotten through the door yet, that would be where I think your vulnerabilities are.

MR. ROSE: Great. Thanks for that excellent overview, Amy. And with regard to your point about Congressman Smith, Brookings will be hosting him tomorrow, for an event. So, if you're interested in hearing his views on nuclear modernization, please join us tomorrow. Let me open the floor to other panelists if they have anything to add. Tom, the floor is yours.

MR. COLLINA: Thanks, Frank, and thanks, Amy, for that tremendous overview. I

completely agree with all the different views that you expressed there. You asked what's different now, and I would just say a couple of things are different now. You know, you have a -- we have a new Biden administration, and Biden is going to do a Nuclear Posture Review or some type of review, later this year, and depending on what President Biden decides to do, for example, about the new ICBM. That'll change views in Congress because Democrats will, for example, be more open to pausing the new ICBM, if the administration is supporting that position.

And the reason the administration might support, I'm not saying they will, but one of the reasons the administration might support that position is because everything that President Biden wants to do takes a huge amount of money, right, whether it be stopping climate change or fighting the Coronavirus, fixing the economy, you know, addressing racial injustice. All these things take money. The budget is, you know, it -- there are a lot of competitions for funds, and the administration's going to have to choose its priorities carefully. So, I think all of that makes it more likely that there will be constraints on Pentagon spending and, particularly, nuclear spending, within Pentagon spending, that, to me, make this year different than previous years.

MR. ROSE: Great. Thanks so much, Tom. Frank, the floor is yours.

MR. MILLER: Thanks, and thanks to my colleagues on the panel. Two quick points. Remember, this is about deterring Xi Jinping and Vladimir Putin, two ruthless autocrats, who break rules all the time, and who invade neighbors who don't have protective umbrellas. It's not about deterring us. If you look at what the last three Strategic Command Commanders, Admiral Haney, General Hyten, now Admiral Richards, say, modernization is going to get there just in time. The systems cannot be life extended much longer. Ash Carter, former secretary of defense in the Obama administration, after leaving office, said, the systems have to be replaced or retired. You know, we are really out of the time necessary, and during the 10 years that we've been debating this, as Amy pointed out, the Russians have modernized their force up to 90%, and the Chinese are modernizing their force, but we don't really have a handle on that. So, it's really important to understand what's going on over the last 10 years.

The second thing is on -- is on cost. The Nuclear Posture Review of 2018 said that the

cost of -- of the nuclear force is between six and seven% of the defense budget. That's broken out, 3% or so, to operate and sustain the current force and the future force, and 3% for modernization, and those -- those numbers came before the congressional caps were lifted, so, a smaller defense budget. I do not believe that we cannot afford 3% of the defense budget to deter nuclear attack. I just think that's a false argument. And as far as the 93 is concerned, Madelyn can back me up on this, all the previous administration asked for is a feasibility study, a feasibility study. That's not going to break the bank. So, I think the financial arguments are just -- are just counterfactual. Thanks.

MR. ROSE: Great. Madelyn, anything you'd like to add on this point?

MS. CREEDON: Well, just one -- one very small point, and Amy went through a really good explanation of all the various things, but there are a couple other things that Congress has done, that I think it actually added to the costs, and one of these things has been preventing the Defense Department, writ large, from retiring older systems. That has certainly placed a financial burden on the Defense Department, and that is a much bigger financial burden on the Defense Department than any of the nuclear programs. So, that's something that, really, has to get discussed seriously, between the Biden administration and the Congress. Biden reiterated that, in his Interim of Guidance, that we have to get rid of these old systems that are -- are burdens.

The other thing, and now this is back more on the nuclear side, is, you know, Congress dictated the schedule on which the NNSA has (inaudible), and it was a schedule dictated, oh, I think, this is my personal view, at some level, because there wasn't, at that point, with the Republican Congress, there wasn't confidence that the Obama administration would actually move forward with making pits. In fact, the Obama administration has invested a lot of interest, and the Trump administration carried it on, but it would be really nice if Congress would let the program dictate the schedules and Congress not dictate the pit manufacturing schedule because it is going to lead to just those things that Amy mentioned, that's overruns, and doing things too quickly, or not taking the right steps, or not looking at ways to do this smartly. Over.

MR. ROSE: Great. Thanks very much, Madelyn. Well, we're in the last 10 minute -- oh,

Amy, you -- did you have a two-finger there? Go ahead.

MS. WOOLF: Yeah. I just wanted to kind of point something out about Tom and Frank's conversation about whether the costs were excessive or affordable. They're not actually talking about the -- or debating the cost of the systems. They're talking about whether or not they value them, to -- enough to pay for them, at those costs. There are, even if it's only 3% or 6% of the defense budget -- I was once in a meeting, where someone pointed out 5% here, 5% there. Eventually, you have 120% of the budget. The budget is limited, even if the Budget Control Act has expired. You have to make tradeoffs, and there are opportunity costs.

As Frank noticed, several past defense secretaries and commanders of Strat Com have all said, this is their highest priority. That's their answer. They want to set -- to set their highest priority. They think spending the money here is the right place to spend it. Tom and others, who think that there are more -- should be or are higher priorities, think that the money should not be spent here. So, the question is not really about how much these systems cost. Although, we've learned a lot about that over the last 10 years, between CBO studies and Pentagon reports. It's nice to know how much they cost.

But at the foundation, this is a debate about how much they're worth, and that is a debate that Congress has a lot more trouble with. They're really good at understanding programs, and budgets, and, as Madelyn said, messing with the budget plans that are sent up by the administration, but Congress debates programs and budgets, but the rest of us, we're talking about the value of the systems.

MR. ROSE: Great. Thanks so much. Well, we've got about 10 minutes left, and we've got a number of questions from the audience, quite a few on the role of allies and partners, and the relationship between modernization and arms control. So, let me pose two questions for you, and turn to each of you, to respond to those questions and provide any final remarks.

The first question is, how are our allies thinking about Russian and Chinese nuclear modernization, especially in the context of proposals to delay or scale back U.S. modernization plans? And the second question relates to arms control. And it is -- it goes like this, should strategic nuclear modernization and efforts at resuming nuclear arms control proceed in coordination? So, I throw the floor

open to the panelists to respond. Madelyn, did you want to start?

MS. CREEDON: So, on that last question, in terms of modernization and arms control, absolutely, they should proceed in coordination, and part -- part of this is, as we continue to modernize, we should also continue to study and adjust, but, as I said earlier, having that robust, flexible, capable infrastructure, that can support arms control, and verification, and nonproliferation, and everything else we need to do in this space, actually allows us to come to the arms control table from a position of strength, so that if we have a robust infrastructure, we probably could reduce the total size of our -- of our stockpile, and it would -- it would also help assure our allies, if they knew that we -- because it is important to them. Our deterrent is very important to them, and they want to -- they want to rely on it, both from a physical perspective and from a political commitment perspective. And again, the infrastructure is a very important part of that, as well as the delivery systems. Over.

MR. ROSE: Great. Thanks. Frank, the floor is yours.

MR. MILLER: Thanks. Frank, two points. I think the allies are worried about Russian and Chinese modernization, and then the fact the Putin makes threats with those modernized systems, as he has over the past decade, specifically targeting allied capitals. I think they -- they worry. Look, after four years of Donald Trump, they worry about our commitment to their defense, and -- and rightly so, and now, if we slack off modernization programs, that are supposed to replace systems that are critical to their defense, I think they will ask more and more questions. So, I think the allies, by and large -- I mean, obviously, every ally government has a point of view, by and large. The major allies and many of the minor allies believe that we need to modernize our forces.

The second thing is I agree. I mean, obviously, arms control and modernization have to go hand in hand. Only the Americans and the Brits believe that arms control is altruistic. The Russians and the Chinese don't engage in arms control, unless they believe that there's a U.S. threat they want to get their hands on and limit, and so, if you think that there's going to be any future arms control with the Russians, let alone the Chinese, if there aren't systems underway in our production base, that they want to get their hands on, I think you're kidding yourself. I just don't think it's going to happen.

MR. ROSE: Great. Thanks, Frank. Tom, the floor is yours.

MR. COLLINA: Thanks, Frank. You know, no offense to Frank Miller, but I feel like when -- when we don't have a reason to justify systems, we use the allies, right? We say, oh, well, we -- we need this because, you know, the allies will go nuclear, if we don't do it. And, look, I -- I completely respect the allies. I understand that the allies have been ignored or worse, under the Trump administration. We need to build our alliances, no doubt about it.

We need to reassure the allies that we'll be there, but not in ways that undermine our own security. We shouldn't build a new ICBM because the allies will be worried if we don't. We should build a new ICBM if we feel we need one, for our own security. The allies can't have veto power over our nuclear posture, particularly when they're not paying the bill. So, we need to make policy that serves our National interests. If those decisions are not what the allies want to hear, then we need to reassure the allies, in other ways. I think when the allies are saying, you know, we want you to deploy these systems, they're saying, we need to be reassured. And there are other ways to do that, conventional forces, diplomacy, financial support. By all means, let's reassure the allies, but it doesn't have to be with nuclear weapons.

MR. MILLER: Yeah, but, Tom, I never said, and I'll be very clear, I never said that we should do something for the allies that we don't do for ourselves. In my 31 years of government service, I never did something that was not in the interest of the United States of America. And the allied comment is important, but what we have to do is what the United States needs, and everything I've said, in support of weapons systems, is what I believe the United States of America need.

MR. COLLINA: I completely support that.

MR. ROSE: Great. Thanks. Amy?

MS. WOOLF: I have to be careful here because I'm going to refer to something that I wrote for -- not for CRS, and I'm here for CRS. So, I got to be careful. These discussions and the way the questions are framed are often seen as an either or. Either we build the weapons that our allies care about, or we've abandoned our allies. Either we build new weapons, or we do arms control. Neither of

those either-ors is sufficient.

We should be doing, as Frank just said, and as Tom just said, what's necessary for our national security interests. Maintaining strong alliances, the Biden administration said it yesterday, in the document, and most national security experts agree, maintaining our alliances is necessary for our national security interests. Our allies care about what we do to reassure them. Most of that reassurance is probably political, diplomatic, and just we're here for you participation. It's not dependent on any particular nut or bolt, in any particular weapons system, but it's a complex picture, it's not an either or. So, as Frank just said, we do what's right for ourselves, and having allies who believe in us, we've believed for 70 years, is right for us. Not my personal opinion, the way the country's operated.

On the arms control and modernization side of it is a longstanding narrative, that the only way we get arms control agreements that serve our national security interests is if we invest heavily in modernization. So, either we can trade things away, as bargaining chips, or convince the other side that they're going to be swamped with our weapons, if they don't agree to arms control. And if you look back at the history, that's not quite an accurate narrative. It's incomplete, and it's not accurate. The history of arms control, we get arms control agreements that we sign when there's a whole bunch of other stuff going on. Often, there's modernization going on, too, but it's not a causal effect. There's a correlation there.

And as Madelyn said, of course, we can do both. We should be doing what's appropriate for our national security interests. If building a weapons system isn't needed for a national security interest, but the argument is made that we need it so we can trade it away in arms control, that's part of this inaccurate narrative, and it's been used often in modernization debates. You heard it back in the '70s and the '80s. We need to buy this so we can trade it away. No, we need to buy it because it either serves or doesn't serve our national security interests, and if in the world context we can then trade it away, we should, or we need to build these things to convince the other side to come to the table and talk to us. Well, if we don't need them, don't build them. And so, my point is very simply that there's a lot more that goes into the equation of what makes a successful arms control arrangement, than just did we

build a weapons system that we can trade away, or are we modernizing our forces, so that we don't fall behind. And when the question is asked, or the answer is given, that makes it look like there's a causal relationship between the two of them, you're missing a lot of the diplomacy, politics, and national security issues, that feed into that calculation, as well.

MR. ROSE: Great. And with that, Amy, we are at the end of our time. Let me thank all of the panelists for a really great discussion. We got into the grand strategy, we got into the nuts and bolts of the modernization program, but we also talked about the politics, and I think it was a very, very useful discussion, that will help inform the debate going forward. So, with that, let me thank you all in the audience, for joining us today, and we -- I hope you have a great rest of your day. Thanks so much. Goodbye. Thanks, everybody, really appreciate it. I thought that was a really good (audio fades).

MR. COLLINA: Frank, you're muted.

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