



Keynote Address: Colin Kahl 2021 Carnegie International Nuclear Policy Conference

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James Acton: Welcome back to the virtual Carnegie International Nuclear Policy Conference. And let me start by expressing my personal congratulations to Bill Potter on winning this year's Thérèse Delpech Memorial Award.

Next up, we have a view from the Biden administration, and in particular from a senior official within the Pentagon. To introduce him and to moderate the session, let me first of all introduce Amy Woolf. There are few people in Washington who I enjoy talking more about with nuclear weapons and baseball than Amy, though not necessarily in that order. And Amy, I wouldn't check the baseball score right now if I were you. Amy is a specialist in nuclear weapons policy at the congressional research service, where she's been for over 30 years. She's alumni of both the Institute of Defense Analysis and the Department of Defense, where she was involved in the 1994 nuclear posture review, and before that at both Stanford and Harvard universities. It won't surprise anybody to know from her resume that Amy is enormously knowledgeable and insightful on these issues. I would also say from a personal note, how incredibly generous she is with her time and with her knowledge. She's one of those people in DC who is always willing to engage into talking to enlighten others.

So Amy, thank you very much for taking the time to moderate this session today. And let me hand over to you to introduce our speaker for this keynote session.

Amy Woolf: Thank you, James. As soon as Dr. Kahl pops up, we'll get started. There we go.

Good afternoon. I'd like to thank the Carnegie Endowment and James for inviting me to moderate this discussion today. I do not have the baseball game on in the background, but now I'm a little worried. It is my honor,

and true pleasure to welcome Dr. Colin Kahl, who is currently serving as the Under Secretary of Defense for Policy. Prior to his current position, Dr. Kahl spent a few years at Stanford serving as the co-director of the Center for International Security and Cooperation, a place that played a central role in drawing me into this policy field. He also has a rich and distinguished career in government, serving, among other things, as the Deputy Assistant to the President and National Security Advisor to the Vice President from October, 2014, to January, 2017. And with that, we're going to dive right into our conversation because I understand that we don't have an opening statement, so I get to start here, and I'd like to begin with the question of what's going on in the world.

Much of the public debate that we face over the role of nuclear weapons in US national security strategy seems to focus on the question of how many and what types of nuclear weapons the United States needs to deter a nuclear attack from a great power adversary. But in recent years, the focus for US defense policy has been on regional conflict, not global conflict. And the concern for the role of nuclear weapons has broadened to include questions about course of nuclear strategies, and escalation control. So Dr. Kahl, can you outline for us how you view the threat environment that we're facing and what role the US nuclear posture plays in addressing those threats?

Colin Kahl:

Yes. Well, first of all, thanks Amy. It's wonderful to be with you and to see you again. And James, thank you for the kind introduction as well. It's wonderful to be back among the nerds here at the 2021 NukeFest. I say this of course as a card-carrying nerd myself, having spent a considerable amount of time in the academy engaging on these issues.

But Amy, I think you started with the right question, which is what is the current strategic environment? Because of course, I was in government four years ago and I will tell you a remarkable number of things have changed just in the time that I've been away from government. So I think as we look out at the strategic environment, especially as it relates to the questions at the heart of #Nukefest2021, I think we see a couple of things.

First, obviously, I think it's widely recognized that we're in a period of accelerating great power competition, but it's more than that. We're also increasingly in a multipolar nuclear world. Russia continues to develop novel kinds of nuclear weapons and grow its arsenal of non-strategic nuclear weapons. We also see the role that nuclear weapons plays in Russia's doctrine is quite elevated, in the sense that I think Russia sees much higher utility for nuclear weapons than any other state. And so obviously Russia is the wolf closest to the shed as it relates to the nuclear issue, but close behind is China's desire to grow their nuclear arsenal, both quantitatively and qualitatively.

I think within the next decade we might see the number of nuclear weapons in China double, but they're also developing new kinds of nuclear weapons, and I think what that suggests is that they may be moving beyond their traditional view of a minimal deterrent towards seeing nuclear weapons as something that they might require in a regional conflict.

I think the other strategic dynamic that has shifted in recent is anxiety levels among our allies, our traditional allies is higher. The last four years has been pretty rough on US alliances in Europe and in Asia. I think that President Biden and Secretary Austin and Secretary Blinken and the rest of our administration has done a terrific job to signal that America is back, as it relates to our allies. You saw a lot of great statements coming out of the G7, and NATO, and US-EU meetings this past week to include on issues like China, where the countries have not always been closely aligned.

But I think we all have to admit there's real anxiety among our allies. So I think whatever we do on the nuclear piece has to take into consideration this emerging multipolar nuclear world, where really for the first time we're going to face to peer competitors in the nuclear space, plus not to mention the North Korea and Irans of the world, and this alliance picture, which is getting into a better place but still I think is full of a lot of anxieties.

Amy Woolf:

Great. So it's complicated. That's helpful. Secretary Austin has used the phrase, "Integrated deterrence," to talk about what our goals are. And Admiral Richard has said, "Strategic deterrence." Those aren't the same things as nuclear deterrence. Can you tell us specifically what the difference is?

Colin Kahl:

Yeah, it's an important question. And that will just say this concept of integrated deterrence that Secretary Austin sees with, it will really be a cornerstone of our forthcoming national defense strategy. But obviously as most of the folks participating in this conference understand, deterrence is at its heart an active dissuasion. You are trying to dissuade an actor from taking an action, a violent action that could undermine your vital national interests. And this can be done in a number of ways.

The classic in the nuclear domain is deterrence by punishment. So the notion of mutually assured destruction. That if one side hits you with nuclear weapons, you have a secure second strike that can retaliate back, and because it's therefore mutually suicidal to go down this path, nobody will do it. But you also need to think carefully about deterrence by denial. That is, how can you deny the benefits of aggression through some mix of defense and resilience, or casting doubt on the effectiveness of the other side's attacks. And there's also what some people call defense by

entanglement, which is creating a normative and rule-based order around which the benefits of maintaining the status quo are elevated, and if actors step out and commit aggression, they can be confident that they will meet an international community which imposes diplomatic costs, economic costs, and military costs on them.

So when the Secretary talks about integrated deterrence, he's talking about deterrence integrated across a number of different categories. Integrated across domains, so deterrence that is integrated across nuclear, conventional, space, cyber, informational. Deterrence across the spectrum of conflict. So everything from high-end nuclear and conventional conflict scenarios on one end, to hybrid and gray zone competition on the other end. He means integrated across the instruments of national power. Since many of the things we need to be doing to deter don't necessarily fall in the military domain, it may be elements of our diplomacy or economic state craft or intelligence and information operations. And then lastly, integrated across our allies and partners, because the distribution of power is changing. And the real ace in the hole for the United States is the fact that we are the only country that has such a robust network of allies and partners.

So when we talk about integrated deterrence, it's about all of those forms of deterrence in all of those categories of integration.

Amy Woolf:

Great. So while we're on the subject of things strategic, last week during the summit, Presidents Biden and Putin kicked off a new strategic stability dialogue. Something we pursued before, but what we heard from Deputy Foreign Minister Ryabkov yesterday is the Russian definition of strategic stability seems a bit different from ours. Do you have a way to describe which weapons systems and concepts we consider to be valid for the discussions on strategic stability?

Colin Kahl:

Well, I think, in part, the strategic stability dialogue is an opportunity for both sides, frankly, to be transparent about their views about what technologies they see as impinging upon strategic stability. I think the joint statement that came out of the meeting between President Biden and President Putin was pretty clear and reiterating that a nuclear war should never be fought and that we need a strategic stability dialogue between the United States and Russia as the world's two largest nuclear powers.

And so I think, in the first instance, strategic stability talks will have a significant nuclear component. I think we're still in conversations with the Russians about how to fold into that, ultimately, conversations on other technologies, both existing and emerging, that could have implications for strategic stability.

So I think it's a little too soon, frankly, to say whether our view of this and their view of this are out of whack. I think where we agree is that at the heart of this will have to be a set of questions around nuclear weapons, and then how we fold in the cyber piece, the space piece, emerging technologies like artificial intelligence, those types of things. I think that's why we're going to hold the dialogue.

Amy Woolf:

Okay. So you said it. Nuclear weapons. Let's talk about modernization for a minute. I'm not going to ask you to review each of the programs or rehash the debates over specific programs. There are CRS reports that can do that for our audience. But during your confirmation hearing, as was also the case with Secretary Austin and Deputy Secretary Hicks, you all expressed support for the triad but said you weren't going to comment on specific programs until you got a deeper dive, but both CBO and GAO have raised questions about the expected costs and timing of each of them.

It seems reasonable to ask whether the Pentagon can continue to pursue each and all of these programs simultaneously. Can you tell us, do you believe in their current form? Are these programs sustainable in bringing them to deployment? Where are your greatest concerns, not only about cost and schedule, but also about the possible implications for deterrence and assurance of our allies if the programs can't be sustained at their current pace or scope?

Colin Kahl:

Yeah. It's an important question. Look, I think where we have been consistent is that the triad is a tried and true bedrock of our deterrence going back many, many decades. The entire notion of having a triad was that you weren't relying on any particular leg being completely survivable to be able to have a credible second strike capability.

I think that the underlying logic of having a triad as a hedge against technological developments that could call into question the survivability of at least one of the legs remains as valuable today as it ever has been, especially given the pace of technological change, the commitment that Russia and China have made to military modernization, the way we see them trying to develop tools to come after us. I do think we need to have a modernized triad as a hedge against an uncertain technological future, but one where we expect our adversaries to be quite competitive and building up their own capabilities.

So we're committed to that. And we're also committed, at the same time, to making sure we're modernizing our NC3 systems, our nuclear command and control systems, because we see that as stabilizing and essential to our underlying deterrent. So as I'm sure you're aware, Amy, the FY22 budget continued to fund modernization efforts. We are now in the midst of kicking off the Nuclear Posture Review, which will be nested within the National Defense Strategy. And happy to talk more about that if you want.

But we are accelerating components of that, which will inform our FY23 budget requests as it relates to various aspects of the triads.

I don't know exactly where we're going to land on numbers on all of this, but what I can guarantee you is that we are committed to having a safe, secure, and reliable deterrent, and one that is credible, not just to our adversaries, but to our allies over which we have extended our deterrence commitments. And so we will have the right mix of forces but exactly the number of them is, I think, still TBD.

The last thing I will say is we do have concerns about the cost and scheduling issues. I think we have to keep our eye on the ball. I think we think we can deliver the current modernization plan on cost and on schedule, but the margins are going to be really close. So it doesn't give us a lot of margin for error. So we're going to have to be mindful of that.

Amy Woolf:

So you're starting the Nuclear Posture Review with a fast look at the forces to meet the 2023 budgets. So does that mean we should have some sense by the end of this year about where the NPR is going on force structure?

Colin Kahl:

I think we will have a much clearer sense. I think our current goal is to do the National Defense Strategy over the coming months. Hopefully putting it out sometime early next year. The Nuclear Posture Review, because of all the issues we talked about in terms of the integrated deterrence framework, we want to make sure that the Nuclear Posture Review does not stand on its own in its own silo, no pun intended, but is rather integrated into the analysis of the NDS. But we understand that if we do that in that sequence of the NDS and then the NPR following as a nested review, then of course, we're going to have to make some decisions about the FY23 budget ahead of that.

So that's what I meant about accelerating the analysis on some of these systems so that if we decide that everything is going forward, we're making sure we're putting down the budget markers for that this year. So you will get, I think, a significant signal toward the latter part of this year on the force structure and our commitments, but of course the overall nuclear posture review. We'll touch on a lot of other things including arms control and strategic stability, non-proliferation, and also these issues of declaratory policy and how nuclear deterrence fits into integrated deterrence

Amy Woolf:

On the issue of declaratory policy, that's been quite a concern for this audience and for others in the community. We've heard debates about whether we should pursue a sole purpose policy or a no first use policy or stick with our calculated ambiguity policy. And we had a declaratory statement in the summit statement last week about nuclear war being unwinnable and should not be fought.

Do all of these statements constitute more of a signaling to our allies and adversaries, or will they eventually trickle down to causing changes in U.S. posture, and operations, and employment guidance? And if so, which approach do you prefer amongst all these different variety of words that describe declaratory policy?

Colin Kahl:

Yeah. Well, look, I'll start probably in an unsatisfying place, which is, I'm not going to tell you what our declaratory policy is and how much it will change, because ultimately that's a decision the President will make and the President hasn't made that decision. So it'll be part of our Nuclear Posture Review, which I said is nested within our National Defense Strategy. So I don't want to get out ahead of the President on this.

But, Amy, let me mention some of the things that we are thinking about as we address this question, at least analytically. Because I want people to understand how seriously we are taking these issues. The first thing that we have to ask ourselves when we're thinking about the Nuclear Posture Review in general, but specifically on declaratory policy is what types of threats are nuclear weapons well-suited to actually deter?

I think that we can all agree that nuclear weapons are a credible deterrent against existential threats. But I think people have big intellects and good faith can disagree about how explicit or ambiguous we should be about scenarios under which we might consider the use of nuclear weapons below that threshold. And that is a debate that we will have internally. The Obama administration was in a particular place, the Trump administration was in a different place.

All I will say is that the Biden administration and the Interim National Security Strategic Guidance did say that we were inclined to look for a way to reduce the role of nuclear weapons in our National Security Strategy. But really what that means is to narrow the scope of the role of nuclear weapons around those threats that nuclear weapons actually address. Because there are a huge number of threats that nuclear weapons do not address.

And so a big... So we will have to figure out what suite of capabilities we generate, not just in the nuclear domain, space, cyber, the advanced conventional domain, what emerging technologies we're investing in, et cetera. So part of declaratory policy is a signal of what you think nuclear weapons are useful for and where you think you'd need to deter using other capabilities. That's thing one.

Thing two is, what are the implications of whatever shift you might make on declaratory policy for direct deterrence? Do your adversaries see it as a sign of strength, of weakness, a lack of resolve, et cetera? I will tell you there my personal view, and this just reflects my view, is I'm not sure our

declaratory policy, there's a lot of evidence to suggest our declaratory policy has an overwhelming impact on our adversaries. I think we could say whatever we want, but they're looking at actually what we're doing and what our interests are. But nevertheless, we have to consider what their direct perceptions are. We also have to consider what their direct perceptions are. We also have to consider how different declaratory policies may increase or decrease risks associated with miscalculation and inadvertent escalation. But then there's the extended deterrent piece. We're not just trying to deter North Korea from attacking the American Homeland, we also want to deter North Korea from attacking South Korea. We want to deter China from attacking Japan. We want to deter Russia from invading the Baltics or using nuclear weapons against our allies. So we have to ask the question of how declaratory policy affects the perceptions of our adversaries, vis-a-vis the allies over which we have extended our nuclear umbrella.

Related to that, but not identical to that is the reassurance question. There's one thing about how our deterrent is in the eyes of our adversaries, but like I said, we have a lot of anxious allies especially after the last four years. The Biden administration's policy has been to double down on our core democratic alliances in Europe and Asia. So we want to make sure that our declaratory policy is as we craft it, that we're in close consultation with our allies, but also that it's something that ensures that our deterrents commitments to them are seen as credible.

Last, but not least of course, is the declaratory policy is sometimes tied to our leadership or what signals we are sending in the realms of things like non-proliferation and arms control, which we care very deeply about. Obviously, one of the first things the administration did was extend New START. We may be edging towards... We'll see whether we're able to conclude a compliance for compliance return to the Iran nuclear deal. We've completed our strategic review of North Korea and we've maintained the long-term objective of denuclearization, but also a near term objective of practical steps to reduce tensions and the threat that North Korea poses to us, all of that doing in the lockstep with the South Koreans and with Japan. We want to make sure that our declaratory policy is helping us achieve our non-proliferation and arms control objectives. So that is, I hope... It is an unsatisfying answer because I didn't tell you what the declaratory policy is because only the President will decide that, but at least I hope it reminds folks that we are thinking seriously through these questions.

Amy Woolf:

Great. Thank you. We have about 15 minutes left and I'm going to turn to the audience questions and thankfully, you've already answered the first one. Patty Jane Geller had asked about your reasoning on declaratory policy, and I think we just got that answer. If we'll move on here, Andre Cursaru asks, "In our multipolar world with the US facing two peer

capable nuclear competitors, how can the United States avoid an arms race, a nuclear arms race especially in terms of qualitative proliferation with China? How can the United States establish a strong, credible nuclear deterrent?" I'm presuming in this relationship with China.

Colin Kahl:

Yeah, it's an important question. Look, I think we have to ask ourselves hard questions about whether us showing unilateral restraint would lead to reciprocal restraint on the other side. I don't see a lot of evidence with that right now, I think, for two reasons. One, I think the Russians are very committed to increasing the role of nuclear weapons in their national security strategy, not decreasing the role of nuclear weapons in their national security strategy. Frankly, I think they would likely do that regardless of our nuclear posture, in large part, because I think that they, whether it's the asymmetry of stakes and the types of regional conflicts that they're envisioning or compensating for certain deficiencies that they perceive on the conventional and in other domains. I think Russia's, at least right now, is on a course to continue to grow its new novel kinds of nuclear weapons and non-strategic nuclear weapons.

Then of course, China is emerging as a systemic competitor of the United States. I think they are moving beyond a view of minimal deterrence and they're probably committed to growing their arsenal pretty much, no matter what we do. As a consequence they have shown no inclination to be involved in arms control. Now, does that mean we throw up our hands? No, it does not. The Biden administration is committed to leading with diplomacy first, which is why we moved out on New START to try to stabilize, or at least not unleash a new strategic arms race with Russia. It's why the President and President Putin agreed to the strategic stability dialogue, which we hope will be a venue for us to talk about the future of arms control and the nuclear and other domains.

I would hope that as China continues its current rise, that they will come to the same position that come to view the fact that the thing that would be very much not in their interest is to find themselves in a major armed conflict with the United States of America. That could happen intentionally, but it could also happen by accident or inadvertently. That, I would hope in the coming years, would give them an incentive to expand communication with us and a willingness to join in strategic stability talks, along the lines that we're kicking off with the Russians.

Amy Woolf:

Just to follow up on that Darryl Kimball asks. I'm going to condense his question here because it is a follow on to that. I think you might've just answered it, but maybe not. He wants to know what is the administration's strategy for engaging with China in these fora, whether it's a P5 or bilateral fora. Darryl says this, not my CRS mind saying this, "Is it the same as the failed Trump concept and how is it different?" But I think what Darryl's getting at here is we all had the sense over the last year or two that the

State Department and the Pentagon were doing more posturing to get China to come to the table than actually policy engagement. How are you going to take a different step or a different approach here rather than just putting flags on tables at conferences or things like that to bring China to the table?

Colin Kahl:

Yeah, look. First of all, I think we're not... The previous administration flirted with the idea of essentially holding US-Russia arms control negotiations hostage to bringing the Chinese into the equation. I think I've seen no signs that our administration is inclined to do that. I think we need to address the Russian threat in isolation while also being mindful that China is rapidly expanding its nuclear and other capabilities. Look, I think we all have to be... Look, we at the Department of Defense are very aware that it is not in our interest and it's not in China's interest for us to stumble into something. Our Navy's operating close proximity in places like the South China Sea. We are flying all over the Indo-Pacific.

There's always the prospect that you get another 2001 EP3-type incident. I do worry. I think a lot of us worry that the politics of kind of the rivalry between the two countries is in a much different place 20 years after the EP3 incident. So we are very mindful of taking every opportunity to thicken our conversation with China as it relates to having military channels, so that we can send clear messages and reduce the risks of miscalculation and manage a potential crisis.

But it does take two to tango. We're willing to do this and be creative about this, but the Chinese government that the CCP and the People's Liberation Army need to be willing to meet us here. So we are open. This isn't just a symbol. This is real. I was serious when I said down the road, we would like to engage in the type of mature conversations we have with Russia on arms control issues, but thus to date, China has not been interested in doing, but in large part, because they say there are very small nuclear power relative to us and the Russians. Well, they're rapidly trying to close that gap so that argument is falling by the wayside.

Amy Woolf:

Thank you. We have lots of questions and we're running short on time so I'm going to jump around a bit here and maybe leave Russia and China for the moment and head to North Korea. Colleen Moore asks, "Are the US and North Korea at a standstill in negotiations? What security assurances is the US prepared to offer to North Korea to get back to the table on peace and security talks?"

Colin Kahl:

I think we've made clear that we're open to dialogue with them. So I think a little bit, the ball is in their court. They've been sending mixed signals in recent weeks about how open they are to re-engaging with dialogue with us, but we're open to dialogue with us. But it can't be dialogue for dialogue sake, it needs to be aimed towards practical measures to reduce tensions

on the Korean peninsula and make practical reductions in the nuclear and missile threat and broader WMD threat that North Korea poses not only to the United States, but to our allies such as South Korea and Japan.

The question of security assurances, it's not something that you dangle as... That's the thing you give them in exchange for them coming back to the table. They should have an interest to come back to the table under pretty significant economic pressure. Our belief is that they can't really get to where they need to go from a security or economic perspective without a dialogue that produces a fruitful outcome. By that, I mean practical steps to reduce the threat that they pose on the peninsula and to our interests elsewhere. But we're open to dialogue, and this isn't a Maximalist, take it or leave it approach. I think we're willing to sit down with them and roll up our sleeves, and see if we can find meaningful, practical steps to get us where we all think we need to be.

Amy Woolf:

Thank you. While we're in Asia, we have one last question here about the Quad from Anum Kahn. "Will the Quadrilateral Alliance turned into an alliance where nuclear weapons in the Indo-Pacific have a role similar to NATO, considering the United States and India are a part of it?" But we can broaden this, saying this was an issue during the Obama administration as well. If we're going to cooperate on assurance and deterrence dialogues with our allies in Asia, as we've been doing for years, could we, should we, why can't we form a more formal alliance that addresses nuclear use and nuclear sharing in Asia like we do with NATO?

Colin Kahl:

Yeah. Look, I give the previous administrations a lot of credit for getting the Quad up and running, and in a very meaningful way. And I think we've picked up that baton and run with it pretty far down the racetrack, actually. One of the first summits, of course, that President Biden engaged in was with his Quad colleagues. First of all, the Quad is not a formal alliance, because we don't have a formal treaty alliance with India. But we have a very good and deepening strategic partnership with India. I think the commonality of interests and the view of the strategic environment between us and India is increasingly aligned. Now, of course, we do have treaty commitments to include the extension of our nuclear umbrella over Japan and Australia already.

So India has nuclear weapons, we have nuclear weapons, and we've extended our nuclear umbrella over the other two members of the Quad in the form of Japan and Australia. So nuclear weapons are already in the mix of the Quad. But I think we are still a ways away from the Quad being formalized into the type of alliance that I think the questioner was talking about. But in the meantime, we have an extraordinary number of things on our common agenda, whether it be in the near term responding to the resurgent COVID pandemic, or dealing with common threats to freedom of navigation and maritime rights in the Indo-Pacific, or concerns that we

may share about China's increasingly coercive behavior. So we have a lot of things to talk about before, we'll cross that other bridge when we get to it.

Amy Woolf: Great, thank you. So we are running out of time. I want to give you the floor for the last few minutes in case there's anything we failed to ask you about that you'd like to tell us, like what programs you're going to cancel, what policies you're going to change, or just any final thoughts you might have?


Colin Kahl: No, the first thing is just a thank you, and just to let all of you know that events like this are extraordinarily important, not only for bringing thoughtful people together on some of the hardest questions we face, but frankly just as generating a community of experts and talent and growing new talent. And I will just tell you one of the things that is true across the National Security Bureaucracy is we also need to build back better, in the sense that in the face of budget constraints and the loss of some of our human capital. And just the changing world, so that the kind of expertise which was extended in the bureaucracies is not necessarily completely well adapted to the way the world is moving. We need all the help we can get.

And so I would really encourage you all to take advantage of internships, or fellowship programs, or IPA's, or other opportunities to serve in government. We are also extraordinarily committed to making sure that our workforce better represents the American people and the full diversity of experiences and backgrounds that can contribute to these issues. I think that the administration has done an extraordinary job at the political leadership level in producing a more diverse leadership cadre. But we need help to recruit talent that is diverse in every meaning of that term. So I really would just encourage all of you to engage public servants like me, engage in public service yourself, encourage your students and colleagues to do it, keep sharing your ideas because we need all the help we can get.

Amy Woolf: Thank you. Thank you very much for your time this afternoon. I know you have to run to another meeting. So with that, I'm going to toss the conversation back to James Acton and the Carnegie folks.

Colin Kahl: Thanks everybody. Thanks James. Thanks Amy.

James Acton: Thank you so much, Dr. Kahl. Thank you so much, Amy, as well for taking the time to moderate that session. And also for Colin to take time out of his exceptionally busy schedule to speak to us. That concludes our formal programming for the conference today. Let me invite you to join us tomorrow morning at 9:00 AM Eastern with the session on Alliances, Proliferation, and Escalation Risks in Northeast Asia. After which there'll be our final session of the conference on New Technologies and the Future of Arms Control. Between those two panels we're going to have an in memoriam session to remember those members of the nuclear policy



community who have passed away since our previous conference back in March 2019. I hope that you'll be able to join us for all of those sessions tomorrow. Let me, in the meantime, thank you for your attention. Thank you.