

Stenographic Transcript
Before the

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

HEARING TO RECEIVE TESTIMONY ON
UNITED STATES NUCLEAR STRATEGY
AND POLICY

Tuesday, September 20, 2022

Washington, D.C.

ALDERSON COURT REPORTING
1111 14TH STREET NW
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(202) 289-2260
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1 HEARING TO RECEIVE TESTIMONY ON UNITED STATES
2 NUCLEAR STRATEGY AND POLICY

3
4 Tuesday, September 20, 2022

5
6 U.S. Senate
7 Committee on Armed Services,
8 Washington, D.C.
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10 The committee met, pursuant to notice, at 9:30 a.m.,
11 in Room 216, Hart Senate Office Building, Hon. Jack Reed,
12 chairman of the committee, presiding.

13 Committee Members Present: Senators Reed [presiding],
14 Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King,
15 Warren, Peters, Rosen, Kelly, Inhofe, Fischer, Cotton,
16 Rounds, Ernst, Tillis, Sullivan, Scott, Hawley, and
17 Tuberville.
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1 OPENING STATEMENT OF HON. JACK REED, U.S. SENATOR
2 FROM RHODE ISLAND

3 Chairman Reed: Good morning. The committee meets
4 today to receive testimony on the United States nuclear
5 strategy and policy. And I would like to welcome and thank
6 the expert witnesses before us today. Ms. Madelyn Creedon
7 is a Research Professor at the George Washington University
8 Elliott School of International Affairs.

9 She brings more than 30 years of senior leadership
10 experience across the Department of Defense, the National
11 Nuclear Security Administration, and the Senate Armed
12 Services committee, where she handles the strategic forces
13 portfolio.

14 Ms. Creedon currently serves as the Chair of the
15 Strategic Posture Commission, which was created in the
16 Fiscal Year 2022 National Defense Authorization Act. Ms.
17 Rose Gottemoeller is the Steven C. Hazy lecturer at
18 Stanford University. She served most recently as the
19 Deputy Secretary General of NATO, and previously as the
20 Undersecretary for Arms Control and International Security
21 at the Department of State, where she was the chief U.S.
22 negotiator of the New START Treaty.

23 She is also a member of the Strategic Posture
24 Commission. Mr. Eric Edelman serves as Counselor at the
25 Center for Strategic and Budgetary Assessments and on the

1 Board of Directors of the United States Institute of Peace.

2 He brings decades of experience at the highest levels
3 of the Defense Department and State Department and has
4 written extensively on arms control issues and strategic
5 stability. Mr. Franklyn Miller is the Principal of the
6 Scowcroft Group.

7 He served for more than 30 years in the Department of
8 Defense and the White House as an expert on
9 nonproliferation, nuclear deterrence, and arms control
10 policy, especially with regard to Russia. He also sits on
11 the Strategic Posture Commission. Thank you again to our
12 distinguished witnesses for appearing before the committee
13 and for your decades of service to our Nation.

14 Our objective today is to discuss the rapid changes in
15 nuclear deterrence, strategy, and arms control we are
16 witnessing around the world. Successfully maintaining our
17 nuclear deterrent is a mission fundamental to our long term
18 strategic competition with China and Russia.

19 This mission has been made especially clear throughout
20 Russia's assault on Ukraine. Russia has conducted out-of-
21 cycle nuclear exercises, issued inflammatory statements
22 about tactical nuclear strikes, and is essentially holding
23 the largest nuclear power plant in Europe hostage to shield
24 its forces.

25 Vladimir Putin's behavior has been reckless to a very

1 dangerous degree. More broadly, Russia has modernized much
2 of its nuclear arsenal, is developing a suite of weapons
3 outside the terms of the New START Treaty to threaten the
4 United States and Europe. These weapons, such as cruise
5 missiles, long range torpedoes, and hypersonic are intended
6 to evade missile defense systems and create a destabilizing
7 challenge.

8 China has also made significant changes to its nuclear
9 approach. Not constrained by the New START Treaty, Beijing
10 has built hundreds of new ballistic missiles and the
11 intelligence community assesses it may have a stockpile of
12 more than 1,000 warheads by the early 2030. In the past
13 two years, we have also seen China develop missile field in
14 hardened silos throughout the country.

15 This development, along with China's development of air
16 delivered weapons and ballistic missile submarines in the
17 South China Sea, fundamentally changes the nature of
18 Beijing's nuclear doctrine.

19 As I mentioned last week at the nomination hearing for
20 General Cotton to be STRATCOM commander, we need to
21 seriously consider that we are entering a new trilateral
22 nuclear competition era. The Cold War was essentially a
23 bilateral competition between the United States and the
24 Soviet Union, and deterrence theory and communication
25 methods were developed based on two rivals.

1 Those rules now must change with the ascendancy of China
2 and its growing nuclear arsenal. I would like to know our
3 witnesses' views on how we might balance strategic
4 stability with both China and Russia, while exploring what
5 can be done to possibly bring both into an arms control
6 framework.

7 Similarly, I would like your thoughts on whether the
8 force structure we are investing in will be able to deter
9 future threats from our competitors. In addition to China
10 and Russia, we must also managed the challenge posed by
11 Iran.

12 In the four years since then President Trump pulled
13 out of the Joint Comprehensive Plan of Action, or the
14 JCPOA, Iran has made key advances in its nuclear program.
15 It has decreased its breakout time to several weeks from a
16 year under the agreement, and Iran announced in July it has
17 detected a capacity to build a nuclear weapon, including
18 the ability to enrich uranium to 90 percent, which is well
19 beyond the 4 percent allowed under JCPOA.

20 Iran has also hardened its infrastructure and replaced
21 damaged equipment with more advanced models. While an
22 agreement to return to Iran to the JCPOA may be closed, the
23 final outcome has not yet been determined. I am interested
24 to know your assessment on Iran's nuclear program and
25 whether you agree that returning Iran to the JCPOA remains

1 in the vital national security interest of the United
2 States.

3 Finally, I will recall the testimony of Professor Paul
4 Bracken from Yale, who testified before the Strategic
5 Forces subcommittee last year. He noted that we are now in
6 a second nuclear age with multiple countries and decision
7 makers involved, a much more complicated environment than
8 the Cold War.

9 Professor Bracken testified that this second nuclear age
10 will still have to think our way through it. Indeed, I
11 hope today's hearing will help us think about and better
12 understand the complexities we are now facing. It is vital
13 that we develop the force structure, policy, and arms
14 control strategies required to overcome the challenges
15 ahead.

16 And I look forward to the witnesses insights into these
17 issues, and I thank them for their participation. And now
18 let me recognize the Ranking Member, Senator Inhofe,
19 please.

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1 STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM
2 OKLAHOMA

3 Senator Inhofe: Thank you, Mr. Chairman. Also want
4 to welcome our witnesses and thank you all for your long
5 service to our Nation. Today we are facing greater nuclear
6 threats than at any time since the worst days of the Cold
7 War, threats that are expected to become even worse in the
8 coming years.

9 China's massive military investments, especially its
10 stunning nuclear breakout, will reshape the global balance
11 of power in ways that we have never seen before. Putin's
12 unprovoked invasion of Ukraine in his pursuit of new
13 nuclear capabilities clearly demonstrate that Russia
14 remains a primary threat to the West.

15 The United States has never faced two nuclear armed
16 peer adversaries. That is worth repeating, because it is a
17 reality. The United States has never faced two nuclear
18 armed peer adversaries. It is clear to me that we are not
19 prepared for this reality. Despite ongoing efforts to
20 modernize, our own nuclear forces are older and less
21 capable than they have been in the past.

22 Our supporting infrastructure is literally crumbling.
23 Thankfully, the Biden Administration did not adopt some of
24 the more radical options discussed during the recent
25 Nuclear Posture Review. However, the Administration's

1 decision to discard planned enhancements to our forces even
2 as China and Russia grow their arsenals, was disappointing
3 to say.

4 Based in part on the advice of numerous senior
5 officers, we have taken bipartisan steps to reverse those
6 faulty choices, but we have much more work to be done.
7 Each of you represents decades of experience in nuclear
8 issues, and I am glad you are here to offer us your
9 perspective on the challenges that we face and how we can
10 best prepare our Nation for dealing with a dangerous
11 future.

12 So I look forward to your testimony. Thank you, Mr.
13 Chairman.

14 Chairman Reed: Thank you, Senator Inhofe. Ms.
15 Creedon, would you begin, please.

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1 STATEMENT OF MADELYN CREEDON, RESEARCH PROFESSOR,
2 GEORGE WASHINGTON UNIVERSITY ELLIOTT SCHOOL OF
3 INTERNATIONAL AFFAIRS

4 Ms. Creedon: Good morning, Chairman Reed, Senator
5 Inhofe, and distinguished members of the committee. It is
6 always an honor to appear before the Senate committee on
7 Armed Services, particularly in the company of such
8 distinguished panelists.

9 Thank you for the invitation and the opportunity to discuss
10 the future of U.S. strategic relationships with Russia and
11 China, the U.S. nuclear modernization programs, how these
12 programs will enable the United States to meet future
13 deterrence requirements, the future of arms control post
14 New START, and how China's rise can be taken into
15 consideration in future arms control agreement.

16 These are important, complex topics that should be
17 discussed more openly and more frequently. So to start, I
18 want to be clear today that I share with you my own
19 personal thoughts and do not represent or speak on behalf
20 of any organization or entity. The world today is a more
21 dangerous, more chaotic, and more uncertain place than at
22 any time since the end of the Cold War.

23 Russian President Putin's distorted version of Russian
24 history and his aggressive, unprovoked attack on Ukraine
25 has resulted in a previously unthinkable land war in

1 Europe. The United States now finds itself, for the first
2 time, in what can only be described as a three peer or near
3 peer multipolar environment, complicated by North Korea.

4 Overlay the regional competition of India and
5 Pakistan, their nuclear arsenals, and their respective
6 complex relationships with Russia and China, and the chance
7 of nuclear use is high. The Doomsday Clock tool is now set
8 at 100 seconds to midnight.

9 In contrast, in 1991, at the end of the Cold War, the
10 clock setting was 17 minutes to midnight. Russia and China
11 engaged in significant military modernization over the last
12 15 years, and both have expanded dramatically the size and
13 variety of their conventional capabilities and nuclear
14 arsenals.

15 China has been focused on growing and improving its
16 conventional space and cyber capabilities, including the
17 recent test of a fractional orbital bombardment system that
18 ended with a hypersonic glide vehicle impacting a target in
19 China. China is amid a surprisingly rapid expansion of its
20 nuclear capabilities, including a true nuclear triad.

21 China has thousands of missiles of all ranges and is
22 expanding its dual use capabilities. Although estimates
23 vary, China is projected to have somewhere between 1,000,
24 1,200, or maybe even more nuclear weapons by 2030.

25 Russia has developed a wide range of non-strategic, dual

1 capable, and novel nuclear systems, in addition to the
2 mostly complete modernization of its strategic nuclear
3 forces, including the SARMAT, a new merged ICBM and a new
4 ballistic missile submarine. Russia also has invested
5 substantial sums, modernizing its conventional and non-
6 kinetic systems, as well as its cyberspace and counterspace
7 weapons.

8 Recall that Russia tested a kinetic A-SAT weapon in
9 November of last year, generating thousands of pieces of
10 space debris and possibly even putting the International
11 Space Station at risk. And of course, for all its
12 conventional modernization, we have seen its fairly dismal
13 performance in Ukraine.

14 North Korea is also increasing its nuclear saber
15 rattling via a new policy, reinforcing its commitment to
16 never give up nuclear weapons, clearly stating its
17 preemptive nuclear use policy, and declaring that nuclear
18 weapons would be used if the regime leadership were
19 threatened.

20 This nuclear policy law is yet another DPRK mechanism
21 to seek acceptance and recognition of its status as a
22 nuclear weapon State permanently. Against this most
23 troubling and dangerous picture, there are six things to
24 keep in mind.

25 First, to maintain a capable, credible, safe, secure,

1 and reliable U.S. nuclear deterrent, the ongoing nuclear
2 modernization program, which is replacing all three legs of
3 the triad, air, sea, and land, plus the nuclear command and
4 control system, as well as other supporting systems, must
5 be fully funded, including taking into account inflation,
6 as there is little to no margin in any of these programs.
7 Maintaining the current systems until the new systems come
8 online is essential.

9 The current systems are past their lifetimes, have already
10 been life extended, such as the Ohio Class Ballistic
11 Missile Submarine, and the new programs will most likely be
12 late, and the hand-off from old to new will be difficult.
13 Three, the infrastructure across the entire complex is
14 mostly old but being replaced.

15 The NNSA complex needs new or expanding manufacturing,
16 and material processing and handling capabilities such as
17 plutonium pits, uranium processing, lithium, tritium, and
18 electronics. The DOD complex also needs new and expanded
19 infrastructure. People, people is number four and probably
20 the most important, recruiting and retaining people at all
21 skill and technical levels is essential, and just about
22 every aspect of the nuclear complex is struggling.

23 Five, we have to ensure that the future systems are modular
24 and adaptable because they will be in the inventory for
25 decades and must meet future threats. And finally, don't

1 give up on arms control, strategic stability, transparency
2 initiatives, setting norms, building relationships where
3 possible, and maintaining nonproliferation and threat
4 reduction programs.

5 A whole of Government approach is needed to find the
6 new ways to reduce tensions and prevent an all-out arms
7 race, which is unaffordable and hopefully something no one
8 wants. With these six ideas, I conclude my remarks and
9 look forward to your questions. Thank you.

10 [The prepared statement of Ms. Creedon follows:]

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1 Chairman Reed: Thank you very much. Ms.
2 Gottemoeller.

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1 STATEMENT OF ROSE GOTTEMOELLER, STEVEN C. HAZY
2 LECTURER, STANFORD UNIVERSITY FREEMAN SPOGLI INSTITUTE FOR
3 INTERNATIONAL STUDIES AND CENTER FOR INTERNATIONAL SECURITY
4 AND COOPERATION

5 Ms. Gottemoeller: Thank you. Thank you, Mr.
6 Chairman. And good morning to you, to Ranking Member, Mr.
7 Inhofe, and to the distinguished members of the committee.
8 I am delighted to be here today. It is very much my honor
9 to appear.

10 You have asked me to comment on the future of arms control,
11 in particular my role on arms control agreements in the
12 context of a possible New START Treaty follow on, as well
13 as how China's rise will be taken into account for any
14 future arms control agreements beyond New START.

15 I am pleased to do so, but I do want to underscore
16 that I agree with my colleague, Madelyn Creedon, in each of
17 the six points that she has just laid out. I think they
18 are an excellent roadmap for how we need to proceed, and I
19 particularly underscore her emphasis on all the necessary
20 points with regard to nuclear modernization.

21 So I am going to abbreviate my prepared remarks in the
22 interest of time, but I do ask that they be placed on the
23 record.

24 Chairman Reed: Without objection.

25 Ms. Gottemoeller: Thank you, sir. Now, turning to my

1 points, I wanted to note that while the Russians are
2 continuing to comply with the New START Treaty, the central
3 limits of which is 1,550 warheads and 700 delivery
4 vehicles, that is the missiles and bombers on which they
5 are deployed, then this will be a significant advantage to
6 the success of the U.S. nuclear modernization.

7 Of course, we must watch carefully for any sign of
8 Russian noncompliance with the treaty. If they continue to
9 comply, the treaty gives the United States a significant
10 level of predictability about the size and composition of
11 the Russian strategic nuclear forces.

12 Therefore, we will enjoy a somewhat stable and
13 predictable environment in which to carry out our own
14 nuclear modernization. And I repeat, it is an urgently
15 needed one. I underscore every point that Madelyn Creedon
16 has made in that regard.

17 My concern is rooted in the fact that the Russian
18 Federation has been embarked on a nuclear modernization for
19 over a decade. They have hot production lines for both
20 their missiles and their warheads.

21 In my view, if suddenly released from New START
22 limits, they could easily outrun us in missiles and warhead
23 production because we are just at the beginning of
24 rebuilding our own missile and warhead production capacity.

25 This fact is the important reason to seek a follow on

1 to the New START Treaty, which expires in February 2026.
2 At that time, we will still be rebuilding our production
3 capacity and be in the midst of our nuclear modernization
4 program. A predictable and stable nuclear environment with
5 the Russians will continue to be vital to its success.

6 As for the Chinese, like others, I am greatly
7 concerned about their nuclear modernization and the opacity
8 with which they are conducting it. They clearly seem to be
9 moving away from their dependance on second strike
10 retaliation as a core tenet of their nuclear doctrine.

11 However, we do not yet know exactly where they are
12 planning to go. Are they rushing to parity with the United
13 States or is something else afoot? Our most important
14 objective with the Chinese must be to influence that
15 direction of travel. Therefore, we should engage as early
16 and as frequently as we can in talks, both to clear up the
17 opacity surrounding their nuclear forces and to convince
18 them of the value of nuclear restraint.

19 To be honest, I am confident that we can respond, if
20 we must, to a Chinese nuclear build up. The competition
21 that concerns me more is in the arena of high technology,
22 artificial intelligence, biotechnology, quantum computing,
23 and other areas. If the Chinese outrun us in that arena,
24 then we will be left in the dust, I am concerned, in the
25 coming decade.

1 In sum, the United States should not be the one to
2 launch a nuclear arms race, but it must be ready to respond
3 to others who do. This point relates not only to the
4 continued strength and viability of our nuclear deterrent,
5 but also to our ability to compete successfully in
6 technology and innovation in the century to come. The last
7 thing that the United States needs as it is trying to
8 prevail in new technologies is a nuclear arms race.

9 One final point, Mr. Chairman, that does not appear in my
10 testimony, I am horrified this morning at the news of
11 Russia's dangerous strike at the nuclear power plant in
12 Southern Ukraine, but I am not surprised. They have been
13 writing of such targets in their military journals for
14 years. But this matter gets at the question of how can we
15 negotiate with such people?

16 My answer comes down to the point that we can't always
17 choose our negotiating partners. We must look to our own
18 national security interest. In my view, it is squarely in
19 the national security interest of the United States to
20 negotiate constraints and restraints on nuclear weapons,
21 and we should continue to do so, both with the Russians and
22 now in the future with the Chinese.

23 Thank you for your attention. I look forward to your
24 questions.

25 [The prepared statement of Ms. Gottemoeller follows:]

1 Chairman Reed: Thank you very much. Let me now
2 recognize Ambassador Edelman.

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1 STATEMENT OF ERIC S. EDELMAN, COUNSELOR, CENTER FOR
2 STRATEGIC AND BUDGETARY ASSESSMENTS, DIRECTOR, UNITED
3 STATES INSTITUTE OF PEACE

4 Mr. Edelman: Thank you, Chairman Reed and Ranking
5 Member Inhofe, members of the committee. I very much
6 appreciate the invitation to appear before you today on
7 this distinguished panel to talk about the challenges that
8 the United States faces in continuing to deter nuclear war
9 and preserving the tradition of nonuse of nuclear weapons
10 that has prevailed globally since 1945.

11 In deference to time and the fact that my colleagues
12 and you, Mr. Chairman, and Senator Inhofe, have already
13 addressed many of the challenges that we face that are
14 addressed in the joint statement that my colleague Frank
15 Miller and I submitted to the committee, I would ask that
16 you include that in the --

17 Chairman Reed: Without objection.

18 Mr. Edelman: -- record of the hearing. And I am just
19 going to limit my comments really to emphasizing one of our
20 preliminary conclusions that Frank, and I reached, that
21 echoes very much what my colleague on this panel, Madelyn
22 Creedon, has said, which is the importance of moving
23 forward with the modernization of our nuclear triad.

24 This is something that the Senate, in its wisdom, when
25 it ratified the New START Treaty in 2010, called for. And

1 it is even more important today in light of the fact, Mr.
2 Chairman, that you and Senator Inhofe and my two
3 predecessors on this panel have adverted to.

4 I would like to make the point that we frequently hear
5 that the modernization of U.S. nuclear forces is either
6 triggering or is participating in an arms race, with the
7 notion that it is an action, reaction parallel effort on
8 both sides, and that U.S. efforts to modernize will only
9 make things worse.

10 In fact, the historical record I think is pretty clear
11 that although there were elements of arms racing in the
12 arms competition between the U.S. and the Soviet Union in
13 the Cold War, by and large, other factors on both sides
14 drove the development of the nuclear forces that each side
15 developed.

16 And rather than the sort of image of apes on a
17 treadmill that is sometimes used to depict that, I think
18 former Secretary of Defense, the late Harold Brown in the
19 Carter Administration captured it best when he said, when
20 we build, the Soviets build, when we stop building, they
21 keep building. And I think that very much describes the
22 situation we find ourselves in today.

23 The United States has actually been quite slow to
24 modernize its nuclear triad. We have only really begun in
25 earnest in the last few years, in the face of this very,

1 very dramatic buildup that we have seen on the other sides.
2 And it is absolutely imperative in order to sustain
3 deterrence, that we maintain a force that is flexible,
4 survivable, responsive, and has the range. And today, as
5 Madelyn suggested, our margin for error -- because we have
6 essentially one program to modernize each element of our
7 triad, as opposed to the multiple programs that our
8 adversaries are fielding for different elements of their
9 triad, we have very, very little margin for error.

10 So with that, I would conclude my oral comments, and I
11 look forward very much to engaging with you and the other
12 members of the committee.

13 [The prepared statement of Mr. Edelman follows:]

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1 Chairman Reed: Thank you, Ambassador. Mr. Miller,
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1 STATEMENT OF FRANKLIN MILLER, PRINCIPAL, THE
2 SCOWCROFT GROUP

3 Mr. Miller: Thank you, Chairman Reed, and Ranking
4 Member Inhofe, and members of this committee. It is a
5 pleasure and an honor to appear before you again. And I
6 should say that the views expressed here this morning are
7 my own, and they don't represent those of any organization
8 with which I am affiliated.

9 As you have noted, sir, we are in a unique and
10 unprecedented time. We need to deter two nuclear peer
11 potential enemies. And Professor Bracken notwithstanding,
12 and I testified alongside him at that hearing, we do know
13 how deterrence works. The United States needs to hold at
14 risk what potential enemy leaders value most.
15 Often we are tempted to assume Xi and Putin think as we do.
16 But as the Scowcroft Commission noted almost 40 years ago,
17 and I quote, "deterrence is not and cannot be bluffed. In
18 order for deterrence to be effective, we must not merely
19 have weapons, we must be perceived to be able and prepared,
20 if necessary, to use them effectively against the key
21 elements of an enemy's power.
22 Deterrence is not an abstract notion amenable to simple
23 quantification. Still less is it a mirror of what would
24 deter ourselves. Deterrence is the set of beliefs in the
25 minds of the enemy leaders, given their own values and

1 attitudes about our capabilities and our will. It requires
2 us to determine as best we can what would deter them from
3 considering aggression, even in a crisis, not to determine
4 what would deter us."

5 Ambassador Edelman and I have stated in our written
6 submission that we believe the United States needs to be
7 able to deter both China and Russia simultaneously.
8 Dictators can agree secretly to support one another and
9 spring that on an unknowing world at short notice. The
10 Nazi-Soviet pact of 1939 is the prime example.

11 This is something we cannot ignore in our planning,
12 even if we believe the event is unlikely. The forces we
13 currently deploy under the New START Treaty will not be
14 adequate for this dual deterrence task. The 1,550 weapons
15 limit was agreed to in 2010, a period in time when Russia
16 was a competitor, not a potential enemy ravaging another
17 European State and threatening to use nuclear weapons on
18 the battlefield, and China was not even a real part of the
19 discussion.

20 As the Commission knows full well, the world is very
21 different now. Our goal must be a secure and effective
22 deterrent, which is sized appropriately for the two nuclear
23 peer task. There is no replacement for such a capability.
24 Arms control treaties, if they provide for a secure and
25 effective deterrent, can help mitigate arms competition,

1 but only if those treaties are observed.

2 They are not a substitute, however, for the deterrent.
3 And the prospects for arms control in the near future are
4 dim. Russia is wholly untrustworthy, and China is
5 scornful. The Putin Government, as a matter of policy, has
6 systematically violated either covertly or overtly all of
7 the arms control agreements it is bound by save for one.
8 And the Chinese Government, believing that transparency and
9 verification are signs of weakness, refuses to enter into
10 arms control talks.

11 So I repeat, there is no substitute for capable and
12 adequate deterrent, which in the current and projected
13 future environment requires an ability simultaneously to
14 deter both Moscow and Beijing from attacking ourselves or
15 our allies. Our current modernization program is
16 absolutely necessary.

17 I believe, however, that in the out years it may
18 likely require that the SSBN and air breathing programs be
19 augmented. And as Ambassador Edelman and I wrote in our
20 written submission, I believe that a nuclear sea launched
21 cruise missile is important both for regional deterrence
22 and for reassuring vital U.S. allies.

23 I look forward to answering and expanding on any of
24 these thoughts during your questions. Thank you.

25 [The prepared statement of Mr. Miller follows:]

1 Chairman Reed: Thank you very much. I thank all the
2 panelists for their excellent testimony. Ms. Gottemoeller,
3 we know China is moving rapidly to become essentially a
4 peer competitor in the nuclear arms race.

5 How can we engage them? And I think -- at least I
6 believe we should try to engage them and Russia in arms
7 control talks and have perhaps an agreement. And what
8 might be the starting point and what might be the endpoint?

9 Ms. Gottemoeller: Thank you, Mr. Chairman. I would
10 say that with regard to China, my colleague Frank Miller is
11 quite right. Thus far, they have been difficult to engage,
12 there is no question about it.

13 I do find, however, that there is a considerable amount of
14 work that has gone on behind the scenes in China, because I
15 work quite a bit on so-called second track activities where
16 it is clear to me that they are studying the matter, so to
17 say. The key thing is for them to get the political go
18 code from Xi Jinping and from the top Chinese leadership.

19 So I continue to believe that it is necessary to work
20 very hard to engage them. And as I put it in my own
21 remarks, to really understand what is behind that opaque
22 curtain they have draped around their nuclear
23 modernization. I know that they are modernizing. We can
24 see that in their triad structures. And I know they are
25 building up warheads.

1 My argument, sir, is that we have some time to consider
2 this matter. We will have strategic warning if the Chinese
3 decide to sprint to parity. You mentioned yourself, as did
4 Mr. Inhofe, that we expect to see China reach 1,000
5 warheads about 2030. More or perhaps less, but we don't
6 expect to see them sprint to the level of the approximately
7 4,000 warheads that the United States has at the moment.

8 So I think we have some time to watch and to try hard
9 to work with them and to get them to recognize the value of
10 negotiated restraint. So I think that that is the most
11 important point I would say about China.

12 Chairman Reed: Ambassador, your comments on this
13 issue?

14 Mr. Edelman: Chairman Reed, you know, I am somewhat
15 skeptical about the willingness of the People's Republic of
16 China to engage in this kind of discussion with us. And
17 partly because, like my colleague, I broke my pick on this,
18 you know, in the Bush Administration.

19 When President Bush, George W. Bush, met with Hu
20 Jintao, they agreed that there should be a dialog between
21 the then second artillery division and STRATCOM. And
22 despite multiple efforts, including my own, we were never
23 able to get there during the remaining three years of the
24 Bush Administration.

25 I know that in the Obama Administration, very serious

1 efforts were undertaken by then Deputy Secretary Jim
2 Steinberg to engage in this kind of discussion, all without
3 result. And there has certainly been no willingness
4 publicly on the part of the Chinese to even entertain the
5 notion of arms control, you know, negotiations.

6 In fact, they have held those out as something that
7 goes on between the United States and Russia, but not
8 something that they participate in. So, you know, the best
9 I think we can do is to work in the track two domain.

10 And I would note that in the history of the U.S.,
11 Soviet arms competition, it took a very, very long time,
12 more than a decade, really, of Pugwash conferences and
13 others to lay the groundwork before we got into serious
14 arms control negotiations with the Soviet Union in the late
15 60s. So that would be the best case, in my view.

16 Chairman Reed: Well, but it is an area, I think, we
17 must pursue in terms of the multiple approach towards the
18 threat, not only being -- having deterrence, but also
19 talking about it. And maybe it will take 10 years, but
20 those are probably 10 years of worthwhile investment.

21 Ms. Creedon, you have experience with the National
22 Nuclear Security Administration. You talked about some of
23 their problems. How serious is the challenge NNSA faces in
24 terms of modernization, of keeping up with the effort?

25 Ms. Creedon: Thank you, Senator. I think the

1 problems with modernization actually exist across the
2 board. So DOD has them, NNSA has them. With respect to
3 NNSA specifically, the most significant problem at NNSA
4 really is the infrastructure. A lot of it is very old.
5 Almost all of it has either been replaced or is in the
6 process of being replaced. It is a huge construction
7 effort that is going on and with a lot of delays. The
8 second thing is really people.

9 The complex is really struggling to attract, retain
10 people, and get good people trained up. So it is
11 significant. Thank you.

12 Chairman Reed: Thank you. Mr. Miller, very quickly,
13 my time is expiring. You have spent years studying the
14 Soviet Union and Russia. Can you comment very briefly
15 about the recent events and how it would affect arms
16 control? Putin has made wild statements about using
17 nuclear weapons or other people have. And just a quick
18 sense of what you feel.

19 Mr. Miller: So I believe, Senator, that Putin
20 understands that our retaliatory capability is adequate
21 today to prevent him from attacking ourselves or our NATO
22 allies. I think that we need to continue to modernize our
23 force to be able to do that into the future.

24 And if there is arms control in the future, somehow it
25 needs to get a handle, as this committee and the Senate

1 said back in 2010, to get our arms around their short range
2 nuclear weapons, which is the one he is threatening to use
3 against Ukraine. But I think the key is to be able to
4 maintain a credible deterrent against him and against Xi
5 Jinping.

6 Chairman Reed: Thank you very much. Senator Inhofe,
7 please.

8 Senator Inhofe: Thank you, Mr. Chairman. Maybe it is
9 my age, but I enjoyed some of the reflections from the past
10 that we shared this morning. Ambassador Edelman, and when
11 you said when the Soviets build -- we build when the
12 Soviets build. When we quit building, the Soviets built.
13 How prophetic that was.

14 Mr. Miller, numerous senior military officers have
15 testified of their support for the continuing the sea
16 launched cruise missile program as a means of offsetting
17 the growth of Russia and China's nuclear arsenals.

18 And I agree with this support. I would ask you, first
19 of all, do you believe that we should continue this
20 program, and you should be able to continue other
21 enhancements as well. Now, you offered in your opening
22 statement to elaborate a little bit on this subject, and I
23 will give you that chance to do it now.

24 Mr. Miller: Thank you, Senator Inhofe. Yes, I agree
25 that a nuclear sea launched cruise missile is important,

1 both to deter Russia and China, each of which have large
2 tactical nuclear arsenals, and to reassure our allies who
3 are faced by those specific tactical nuclear arsenals.

4 So it is a program that I think is modest, but I think
5 it makes a useful contribution. And I don't think it
6 creates any sort of an arms race potential because we are
7 basically at very low levels there, and both Russia and
8 China have much higher levels.

9 Senator Inhofe: Yes. And I agree with that excellent
10 statement. This question would be for all witnesses,
11 considering what we know about China's nuclear breakout and
12 Russia's large non-strategic nuclear weapons arsenal, do
13 any of you believe that the United States should not
14 continue modernizing its own forces? I would like to have
15 each one of you respond to that.

16 Ms. Creedon: Senator Inhofe, I completely agree. The
17 U.S. must continue its modernization programs of all three
18 legs of the triad.

19 Ms. Gottemoeller: I do agree that the United States
20 must continue its modernization programs at pace across the
21 program of record.

22 Mr. Edelman: Senator Inhofe, as I said in my opening
23 oral remarks, I think it is imperative that we do so to
24 sustain deterrence into the future.

25 Senator Inhofe: Excellent.

1 Mr. Miller: Senator, I absolutely agree. And as I
2 said in my remarks, I think in the out years, in the 2030s,
3 we may need to augment that program by buying more SSBNs
4 and more long range standoff weapons, and I am happy to
5 elaborate on that at some point if you want.

6 Senator Inhofe: Thank you very much. And I
7 appreciate the specifics by each one of you. Thank you,
8 Mr. Chairman.

9 Chairman Reed: Thank you very much, Senator Inhofe.
10 Senator Shaheen, please.

11 Senator Shaheen: Thank you all for being here. Just
12 to follow up on Senator Inhofe's question about the
13 importance of modernizing in order to hopefully provide the
14 deterrence that we need as we look at the capabilities of
15 Russia and China. What do each of you consider to be the
16 biggest threat to modernization? I will ask you to begin,
17 Ms. Creedon.

18 Ms. Creedon: Probably two things. The first is
19 money, and the second is a sustained commitment on the part
20 of everybody, the Administrations, this one, successive
21 ones, as well as Congress, and also the commitment of the
22 American people to truly be able to sustain a deterrent.

23 Senator Shaheen: And do you believe that that
24 commitment is there now?

25 Ms. Creedon: I do. And it has been there for a

1 couple of years. I continue to think that at times it is
2 more fragile than others. Right now, I think it is quite
3 strong. But this is a very long term program. And the
4 handoff between the old and the new isn't really going to
5 happen for another 10 years. And then we have got a very
6 long period of time where it is very difficult to handoff.

7 Senator Shaheen: Ms. Gottemoeller, do you have any
8 difference in your thinking about what the biggest threat
9 is?

10 Ms. Gottemoeller: Well, again, Senator Shaheen, I
11 agree with my colleague Madelyn Creedon with regard to the
12 long term commitment of the U.S. public and also of our
13 Government from one Administration to the next, very much,
14 so when it comes down to ensuring a clear budgetary path,
15 as I said, maintain our intense modernization at pace so we
16 don't have dips and ups and downs and delays.

17 But the other thing I would worry about, and I
18 mentioned it in my remarks, is our industrial capacity. We
19 have not had ability, I would say, to really turn out
20 missiles and warheads now for many years in a steady pace.

21 And so we need to rebuild our industrial capacity to
22 be able to do so. And I support the efforts that are
23 underway to improve our industrial facilities for both
24 missiles and warheads.

25 Senator Shaheen: Thank you. Do either of you have

1 anything different than those responses?

2 Mr. Edelman: Senator Sheehan, I don't have anything
3 different. I agree with what both Madelyn and Rose have
4 said, but I would add that I think the education of the
5 American public about these issues, which I think is
6 extremely important since we really haven't talked about
7 them very much as a Nation, in all honesty, since 1992,
8 since the end of the Cold War.

9 And in that regard, I think I commend the committee on
10 holding this hearing, because I think at least that helps
11 begin a process, but it has got to continue. We have to
12 talk about this more to the public so that they appreciate
13 what is at risk.

14 Senator Shaheen: Mr. Miller.

15 Mr. Miller: Let me agree with my colleagues but let
16 me point out also that the industrial base includes the
17 private sector. And I think that in the area of
18 shipbuilding, submarine building, building missiles, we
19 have lost a great deal of talent and we need to worry about
20 that, particularly about recruiting people through the STEM
21 programs, so that we have enough welders and enough
22 engineers and enough designers to carry these programs
23 through into the future.

24 Senator Shaheen: Well, thank you. I think that is a
25 very important point. And I would just argue before this

1 committee that one of the things we need to do is to
2 reauthorize the Government programs and encourage
3 innovation and encourage the private sector to do the
4 things that we need. Programs like the SBIR and STTR
5 Program.

6 But I want to go back to you, Ms. Gottemoeller, as
7 somebody who has spent a fair amount of time at NATO. Is
8 there a role for NATO as we look at the nuclear deterrence,
9 the need to try and bring China into some of these
10 discussions. Do we think there is anything that NATO can
11 do there to be helpful?

12 Ms. Gottemoeller: That is a very interesting
13 question, Senator. I do believe that NATO can play a role
14 here. First of all, NATO is very concerned about the
15 necessity of getting constraints on non-strategic nuclear
16 warheads and the missile systems that deliver them. Frank
17 Miller pointed this out a few moments ago.

18 As -- this is the objective that has to be at the top of
19 the priority list in our next arms control negotiations.
20 The allies completely agree with that and are prepared to
21 be supportive, in my view, including the kinds of
22 cooperation with the United States that may be necessary to
23 establish a monitoring and verification regime for such a
24 treaty or agreement that would involve bases in Europe.

25 I do believe that they are ready to work with us on

1 that. Second, your question about China is very
2 interesting because China and NATO have established some
3 political military dialog and it is my understanding that
4 in fact that dialog has been rather rich and ongoing with
5 regard to arms control topics. So perhaps there could be a
6 role for NATO in that regard also reaching out to China.

7 Senator Shaheen: Thank you. Thank you all very much.

8 Chairman Reed: Thank you, Senator. Let me recognize
9 Senator Fischer, please.

10 Senator Fischer: Thank you, Mr. Chairman. First of
11 all, I would like to thank the panel for being here today.
12 And to all of you, thank you for your very strong comments
13 of support for nuclear modernization.

14 And Ms. Creedon, I specially took note when you said
15 we also have to factor in inflation, when we look at what
16 is needed in order to keep up on schedule with regards to
17 nuclear modernization. So thank you for that.

18 Also, in looking at a nuclear arms race and looking at
19 the New START Treaty and what is there, Mr. Miller, I liked
20 your comments about Russia is not trustworthy and China is
21 scornful. We all know that. None of us want to see an
22 arms race. But I would say to you, I think we are seeing
23 one.

24 We are seeing it with our peer competitors, and that would
25 be Russia and China. They are in a race with us in trying

1 to outpace the capabilities that we have. So I also
2 appreciated many of the comments that we have heard so far
3 with regard to that, where we look at comments from members
4 in the past, from Ash Carter, for example, who said in the
5 last 25 years we have only made modest investments in basic
6 sustainment and operations, and we haven't built anything
7 new in 25 years.

8 And we are seeing tremendous advancements from the Russians
9 and the Chinese with what they are building, what they are
10 testing, and what they are capable of or will soon be
11 capable of. Mr. Miller and Ambassador Elderman, I saw in
12 your prepared statement you referred to China's test of a
13 fractional orbital bombardment system as extremely
14 destabilizing development.

15 And you go on to describe, "a decapitation option that
16 would also undermine many assumptions about deterrence and
17 force Governments to adopt very risky launch on warning
18 postures." We have heard similar testimony to that from
19 Admiral Richard, but I don't remember us ever digging into
20 this at any of our hearings.

21 So I kind of wanted to go off on that today and have
22 you explain this problem that we are facing. Give us a
23 little more detail on that and walk us through why you feel
24 that this system would be so destabilizing. Ambassador,
25 would you like to start?

1 Mr. Edelman: Thank you, Senator Fischer. I am happy
2 to start and then let my colleague do clean up on isle
3 nine.

4 So, the basis of deterrence, we discovered after long
5 and hard efforts during the first 15, 20 years of the Cold
6 War, was for each side to be able to have an assured second
7 strike capability, a retaliatory capability that would
8 allow it to ride out a first strike and then inflict
9 unacceptable damage on its adversary.

10 In order to do that, you have to have robust nuclear
11 command and control. And the danger that the FOBs test I
12 think represents to us, the maximum danger, is that it
13 could be, we don't really know why the Chinese did it, but
14 it could be because of the path it takes which evades our
15 early warning systems and finishes, as Madelyn pointed out,
16 with a hypersonic glide vehicle -- it could essentially be
17 the basis of a no warning attack on the national command
18 authority.

19 Senator Fischer: It is a first strike use, and it is
20 also a surprise attack where we wouldn't have that warning,
21 correct?

22 Mr. Edelman: Correct. And that is the danger in it,
23 because the assumptions of stability are the ones that I
24 articulated that we have to maintain. But if I have
25 misstated anything, I know my colleague will correct me.

1 Mr. Miller: Eric didn't misstate anything. I mean,
2 we faced short warning threats in the past from Soviet
3 cruise missiles, submarines off our coast way back in the
4 old days, Yankee class ballistic missiles, submarines, but
5 we would know about the launch of those weapons, and we
6 would be able to track them.

7 In this case, as Ambassador Edelman said, we would not
8 have that kind of warning if this system de-orbited, and we
9 wouldn't be able to tell where it was going. So everything
10 that you have said, and that Ambassador Edelman said is
11 correct, Senator.

12 Senator Fischer: Do you believe that it is necessary
13 for us to continue to look for other options that we could
14 have in order to maintain a very strong deterrence,
15 including being able to identify such surprise attacks so
16 that we wouldn't see this decapitation happen to us, and
17 that would then be off the table?

18 Mr. Miller: Yes, ma'am. I think we need to do that.
19 And I think we need to continue to build a strong and
20 robust nuclear command and control system. We have allowed
21 that system to wither after the Cold War ended. The
22 Department of Defense is now working to improve that. But
23 that is an absolute priority.

24 As Madelyn Creedon indicated, that is often forgotten.
25 We talk about the triad, but command and control is at the

1 heart of all of that.

2 Senator Fischer: I don't forget it. NC3 is extremely
3 important. Thank you. Thank you, Mr. Chairman.

4 Chairman Reed: Thank you, Senator Fischer. Senator
5 Kaine, please.

6 Senator Kaine: Thank you, Mr. Chair. And thank you
7 to the witnesses for your wonderful testimony and your
8 service. I want to ask some intel questions to begin.
9 Isn't it the case that our ability to deter is advanced
10 significantly if we have the most comprehensive awareness
11 of the nuclear capacities of our adversaries? Is that fair
12 to say?

13 Mr. Miller: I would say that what we have to have is
14 the most exquisite understanding of what the potential
15 enemy leaderships value. We know about their weapons
16 systems. The weapons systems are at the command of their
17 national leaders.

18 So we need to know what to hold at risk, which
19 canonically has been the leadership itself, those
20 structures that keep them in power, selected parts of their
21 military forces, the industrial potential to sustain war,
22 so that they know if they aggress against us or our allies,
23 that terrible things will happen to their ability to have a
24 country.

25 Senator Kaine: And in addition to wanting to know

1 that about our adversaries, if the goal is to deter nuclear
2 war, it is also important to have good intel about other
3 nations that are not adversaries. So, for example, India
4 and Pakistan are nuclear nations. They are not
5 adversaries.

6 But if the goal is to deter nuclear war, having
7 exquisite information about their plans and nuclear
8 capabilities is important. And it is also important to
9 have information about our allies, NATO allies, what their
10 intentions are. This information is extremely valuable.
11 It is extremely valuable, and it is very dangerous if it
12 gets in the wrong hands.

13 There is a prosecution going on right now in West
14 Virginia of somebody who works over at the Navy Yard who
15 was trying to pass U.S. nuclear secrets to a Nation that is
16 not an adversary. Brazil, as is publicly reported, seeking
17 huge dollars for it. The Federal judge in that case just
18 threw out a plea agreement where the individual, Mr. Tobey,
19 would have been sentenced to 17 years in Federal prison.

20 The judge threw that out as insufficient. So
21 obviously information about U.S. nuclear capacity in the
22 wrong hands is extremely valuable and it is very dangerous
23 of that information gets out. And I guess I would like to
24 explore the danger of information getting out that we have
25 about not our own capabilities, but other nations.

1 If having exquisite information about adversaries or
2 allies or other nations is important to us to further a
3 deterrence goal. If our information, for example, about
4 adversaries exquisite capabilities were to be released, I
5 could imagine very significant dangers. I mean,
6 adversaries would understand what we would know about them.
7 They could change their plans, they could obscure what they
8 are doing. They could make it more difficult for us to
9 come up with the right modernization to deter them.
10 Similarly, information we have about allies' nuclear
11 capacity. If those were to get into the wrong hands, they
12 could be used by other adversaries to target them.

13 So I guess I want to ask you, given that having
14 exquisite information about the nuclear capabilities of
15 other nations and their intent, and their thoughts about
16 deterrence, given how important that is, you would agree
17 with me that this kind of information, if it is held by the
18 U.S. Government, is highly, highly valuable and we should
19 do everything we can to make sure that it is not released
20 to others without authorization, correct? Ms. Creedon.

21 Ms. Creedon: Yes, sir, very much so. And I would
22 also add, there are other things that are of equal
23 importance.

24 So, for instance, cyber capabilities, space
25 capabilities, all the things that underpin our deterrence

1 and that we need to know about so that we can have a strong
2 deterrent and also to be able to counter and protect
3 against some of those things which are not openly known
4 that others are doing.

5 Senator Kaine: Others who want to weigh in? Ms.
6 Gottemoeller.

7 Ms. Gottemoeller: If I may briefly comment, Senator.
8 It is a fine balance. I agree with you, absolutely, that
9 information must be defended and without authorization must
10 not be released. In certain circumstances, information can
11 have a deterrent effect, of course.

12 And I wanted to add to my answer to Senator Shaheen a
13 moment ago that one of the things that has happened lately
14 is the NATO allies have all move forward on modernization
15 of their dual capable aircraft.

16 Some such as the Germans, we were not expecting them
17 to move forward so smartly. So having them move forward
18 and talk about it publicly is good for deterrence in
19 Europe. So sometimes the information is valuable in that
20 realm.

21 Senator Kaine: And usually if that information is
22 going to be shared, there would be a strategic discussion
23 about the value of it being shared, not shared -- and I
24 think, Ms. Creedon, you opened off and said it was a
25 chaotic world these days. Information like that, if it is

1 going to be shared, should be done so strategically and not
2 in a one off chaotic way, correct?

3 Ms. Gottemoeller: Absolutely, sir. And
4 authorization, proper authorization from the Government in
5 charge of the information responsible for it is always
6 necessary.

7 Senator Kaine: Thank you. I yield back.

8 Chairman Reed: Thank you, Senator Kaine. Senator
9 Rounds, please.

10 Senator Rounds: Thank you, Mr. Chairman. First of
11 all, to all of you on the panel, thank you very much for
12 taking the time to come in and to share with us your
13 thoughts today. In the 2022 NDAA, Congress created a
14 Strategic Posture Commission to review many of the
15 important issues that we are discussing here.

16 I know that three of you are members of the Commission
17 with Ms. Creedon also chairing that group. Ms. Creedon,
18 could you give us briefly an update on how the Commission's
19 work is going? And is there any assistance that this
20 committee can provide to help assure the Commission's
21 success?

22 Ms. Creedon: Well, thank you for that question,
23 Senator Rounds. So clearly the Commission got off to a
24 fairly slow start. We had a lot of logistical issues. But
25 I would say the folks at Washington headquarters services

1 and the Pentagon and others, and also staff of a number of
2 the committees were very helpful getting us around some of
3 the initial security and ethics sorts of things.

4 The Pentagon also worked really quickly to get our
5 FFRDC on board. We still have a lot of ongoing logistics
6 issues that are continuing. I worry with those if we will
7 actually be able to make our due date or not.

8 They are just difficult, and they seem to be never
9 ending. On the other hand, the Commission has managed to
10 meet three times, but we have had one classified session
11 and one unclassified session, one virtual one.

12 And so that has all been going pretty well. We have
13 certainly had challenges, mostly with the arrangement the
14 department has put in place to screen briefings and
15 documents in advance. So right now, all DOD documents and
16 briefing material provided to the Commission must be
17 reviewed by the Office of Policy to determine if they are
18 releasable to the Commission.

19 We have been told that as a Legislative Branch body,
20 we are being treated as a Congressional committee with
21 respect to the information that DOD will provide. So we
22 are very early in the process.

23 The Deputy Secretary of Defense wrote a memo to all duty
24 components in early August, and she stated in her memo that
25 DOD components are directed to provide full and timely

1 cooperation with the Commission through the DOD liaison in
2 fulfillment of the Commission's statutory duties and
3 responsibilities as appropriate and consistent with
4 applicable laws and regulations.

5 So right now, at the moment, we haven't had a
6 substantive issue, but as I have told DOD, I am not
7 optimistic, but I will certainly remain hopeful that the
8 Commission receives what it needs to accomplish its
9 statutory tasks.

10 Senator Rounds: Thank you. I think, clearly there
11 was a reason why we put emphasis on it in the 2022 NDAA. I
12 simply draw attention to the fact that it is something that
13 we all are looking forward to receiving.

14 So, and we thank you for your work. I would offer
15 this question, and I know that we are going to run out of
16 time, but I am going to try it anyway. It seems to me that
17 we are really beating around the bush when we start talking
18 about negotiating a New START Treaty, unless we have China
19 involved in this as well.

20 I am just going to ask the panel briefly if I could, isn't
21 it really futile to do a New START Treaty unless we have
22 all three of the major powers involved in actually agreeing
23 to something? And right now, it doesn't appear that Mr.
24 Putin has necessarily followed through with everything that
25 you would normally consider to be acceptable behavior,

1 particularly in Ukraine.

2 So just briefly, what is the use of a New START Treaty
3 unless we get China involved in this as well?

4 Ms. Gottemoeller: Perhaps I will start, Senator, if I
5 may. I want to underscore that I do believe it is
6 necessary to get China to the table, but the size of their
7 strategic forces still remains well below that of the
8 United States and the Russian Federation.

9 We have, under the New START Treaty, 1,550 deployed
10 warheads, we and the Russians, with additional warheads,
11 approximately 3,000 each, in addition. So our numbers are
12 much higher. And so I think we can negotiate on the basis
13 of equality. I think we need to strive to negotiate with
14 the Chinese on the basis of equality also.

15 And for that reason, I have been urging that we get
16 into negotiations with them as soon as possible in areas
17 where we have some equality of capability. That is what
18 will bring them to the table. Intermediate range, ground
19 launched missiles, for example. I think that is an
20 excellent area to try to begin to actually constrain and
21 reduce with regard to the Chinese.

22 In the meantime, however, we cannot let their
23 modernization go unanswered. We have to figure out what
24 they are doing, and they have to really, I think, talk to
25 us about it, because otherwise we must suspect the worst,

1 as all of us around this room suspect the worst. So we
2 need to understand what they are up to, and as I said in my
3 statement, work with them to convince them of the value of
4 negotiated restraint.

5 Otherwise, we are going to have, I fear, an all-out
6 arms race. And so I think that is a very concerning
7 matter. But I think there are two separate things. There
8 are negotiations to reduce and constrain where there is
9 some equality of capability. And then there are some very
10 direct, tough discussions about what they are up to.

11 Senator Rounds: Thank you. Mr. Chairman, my time has
12 expired, but I simply I would thank the panel for your
13 work, and I would certainly appreciate your response.

14 Chairman Reed: Thank you, Senator Rounds. Senator
15 King, please.

16 Senator King: Thank you, Mr. Chairman. This morning
17 we have used the word deterrence about 50 times. It is the
18 bedrock of our strategy with dealing with nuclear weapons
19 going back 70 years. Here is my concern, terrorists with
20 nuclear weapons.

21 Deterrence depends upon the other side having a fear of
22 death and a fear of destruction and a fear of the loss of
23 their country and their infrastructure and their capital
24 city. What about people who, A, don't care about dying,
25 and B, have no capital city?

1 While we were talking here this morning, I Googled
2 building a nuclear weapon, and I even misspelled building
3 but still got dozens of responses on Google. How to build
4 a nuclear bomb and other weapons of mass destruction, a
5 Book.

6 YouTube, making a nuclear weapon. My personal
7 favorite to YouTube, so you want to build a nuke? We need
8 another theory or an adjunct to the theory of deterrence to
9 deal with the threat of terrorists with nuclear weapons.
10 We have got countries, Iran and North Korea probably the
11 most likely, building with fissile material.

12 And Iran's a week or two away from enough from fissile
13 material. How do we deal with this threat? Mr. Miller,
14 your thoughts? It seems to me this is a whole new category
15 that, frankly, I don't think we are addressing.

16 Mr. Miller: So, Senator King, I think I would have
17 two groupings or maybe three, Russia and China, classic
18 deterrence. I think that a North Korea or an Iran would
19 fall into the case of a classic deterrence situation,
20 because, as you say, there is a leadership, there are
21 capital cities, there are valued assets.

22 Senator King: I am talking about --

23 Mr. Miller: I understand --

24 Senator King: -- 15 people in a tramp steamer headed
25 for New York harbor.

1 Mr. Miller: Yes, sir. I understand. And so the
2 third category is terrorists. And I think that is outside
3 the realm of nuclear deterrence. That is the realm of
4 special operations forces. It is the realm of
5 intelligence. It is the realm of conventional forces. It
6 is the realm of prevention. It is the NPT.

7 It is working with allies and like-minded States to
8 prevent those people from getting the fissile material and
9 from getting the weapons knowledge. But as you pointed
10 out, you can get the weapons knowledge. But that is
11 different than classic deterrence.

12 Senator King: I agree. That is the problem. The
13 theory of deterrence doesn't apply to this situation, which
14 I think is one of the most serious likely threats. I would
15 suggest perhaps a Manhattan Project to figure out how to
16 detect nuclear material from space or from a distance as
17 our best defense, because deterrence won't work. Other
18 want to address this question? Ms. Creedon.

19 Ms. Creedon: Yes, sir, if I may. So for many, many
20 years, the United States and Russia engaged in a
21 cooperative threat reduction program, which made very
22 substantial gains in securing the materials, the uranium,
23 plutonium. Because at bottom, nobody can make a weapon
24 without the materials, plutonium and uranium.

25 So the focus on materials continues to this day.

1 There is a very large program at NNSA, the Defense Threat
2 Reduction Agency at DOD has them, DHS is focused on them,
3 and it ranges from all sorts of detection capabilities to
4 even interdiction capabilities.

5 Senator King: Do you think it is adequate or is this
6 something that should be ramped up?

7 Ms. Creedon: So, I think it is quite good. What I
8 worry more about is that it is not well understood and like
9 other things, I think there is this personal opinion. Of
10 course, I also think there is a little bit of a maybe a
11 boredom, maybe a tiredness with the threat of nuclear
12 terrorism. It hasn't happened.

13 We always thought it was going to. It hasn't
14 happened. So I worry that the fear of it, the threat of it
15 isn't taken seriously and it has to be. So all of these
16 programs --

17 Senator King: People that attacked us on September
18 11th killed 3,000 people. They would have killed 3 million
19 if they could have. And I think this is something we have
20 to take extremely seriously.

21 Let me ask another question in the little bit of time
22 left. It seems to me, Mr. Miller, that hypersonics changes
23 the strategic balance altogether. And you suggested, I
24 think it was you that was talking about the danger. You
25 can have a nuclear weapon essentially dwelling in low earth

1 orbit over Washington.

2 The analogy to the sword of Damocles is inescapable. Does
3 this -- it seems to me, we can talk about the technology of
4 the command and control, but if the President, the vice
5 President, and all the leadership of Congress is gone, we
6 are decapitated, there is no one to make the decision to
7 launch, which undermines the deterrence because of the lack
8 of a second strike, as you outlined.

9 Should we have the vice President live somewhere else in
10 the country? Should we disperse our leadership in some
11 way? Because I think you raise a very important point.
12 Without the threat of a second strike, of a retaliatory
13 strike, deterrence doesn't work.

14 And if part of that is command and control, and I
15 don't mean technology, I mean people, maybe we ought to
16 think about having the vice President live in Kansas City.

17 Mr. Miller: I won't speak for Kansas City, Senator.
18 So I will be very careful in answering your question,
19 because once upon a time I was involved in Continuity of
20 Government programs. We need a survivable Continuity of
21 Government to include nuclear command and control.

22 Even a fractional orbital ballistics system would not
23 come out of the clear blue sky, and it would not come at a
24 time of total peace. In a time of building tension --

25 Senator King: What if the weapon is up there

1 permanently? It is just in low earth orbit, just like
2 Starlink, only it has a nuclear weapon that it can then --
3 in my calculations, it would take about 10 minutes to hit
4 the earth out of -- from 1,200 miles.

5 Mr. Miller: Someone would need -- someone who owns it
6 would need to make the decision to attack us. And
7 presumably, presumably, that would not come at a time of
8 total peace.

9 In a time of building tension, I think it is incumbent
10 on the Government to establish a survivable nuclear command
11 and control system, which may include dispersing senior
12 officials to more remote locations in Washington, D.C.

13 I think the Government has practiced that in the past.
14 It can always be improved, but I think the point that you
15 raise is particularly important.

16 Senator King: Thank you. Thank you, Mr. Chairman.

17 Chairman Reed: Thank you, Senator King. Senator
18 Tuberville, please.

19 Senator Tuberville: Thank you, Mr. Chairman. Thanks
20 for being here today. Just to follow up a little bit on,
21 Senator King here, the direction he was going. You know,
22 we operate on the assumption that we, I mean in the
23 President has 30 minutes to respond to a nuclear attack.
24 But with the advent of hypersonics, where do we stand with
25 that today? Anybody want to answer?

1 Ms. Gottemoeller: Perhaps, Senator, I will just add
2 one remark, which is that ballistic missiles, ICBMs, are
3 hypersonic. What is different today is the maneuverability
4 and the end game. So that is what poses the -- so in some
5 ways, we are not facing a new threat because we have a
6 hypersonic threat coming at us, but we are facing a new
7 threat in the fact of this maneuverability.

8 So I think that where the emphasis has to calm is on
9 resilience in our command and control system, particularly
10 in our command and control system for the strategic nuclear
11 forces. And Mr. Miller has already referred to that, but I
12 really just wanted to underscore that message.

13 Senator Tuberville: Thank you.

14 Ms. Gottemoeller: If I may just add one more thing.
15 Exercising -- exercising this capability, which we don't do
16 enough of.

17 Mr. Edelman: Senator, I just would like to add one
18 comment here, which is we had discussed earlier the -- with
19 Senator Fischer, the fractional orbital bombardment system,
20 which has a hypersonic glide vehicle on the end of it,
21 which is the problem that you have with no notice attack.

22 It is not just China. It was the Russians who first
23 experimented with this in the 1960s and 70s. It was
24 constrained by the original START treaty. The Russians
25 have allegedly had abandoned it, but it was mentioned by

1 President Putin in 2018 when he talked about other exotic
2 nuclear capabilities.

3 So it is not really clear whether the Russians have
4 totally abandoned this idea or not. So it is not just
5 something we need to worry about with regard to China. We
6 also need to worry about it with regard to Russia in my
7 personal view.

8 Mr. Miller: If I could, Senator. This is not the
9 topic of this hearing, but you have talked about
10 hypersonics. I think we need to pay a lot more attention
11 to conventionally armed hypersonics. The Russians and
12 Chinese have conventionally armed hypersonics would pose a
13 terrific threat to our naval forces, to our surface forces
14 at sea.

15 We are on the cusp of deploying some hypersonic systems
16 ourselves, which would be absolutely critical to taking
17 down the A2 -- I am sorry, the anti-access area denial
18 defenses that the Navy has been complaining about for 15
19 years. But we are proceeding with deployment at a snail's
20 pace.

21 But if our Navy is going to be able to operate in the
22 South China Sea in a war or in the Baltics, we need to take
23 down those antique surface and anti-air defenses. And I
24 think the committee, in its own different work, needs to
25 look very much at those conventional hypersonic systems,

1 and to push the Pentagon to speed their deployment.

2 Senator Tuberville: Thank you. The last couple of
3 years, Admiral Richard has made his top unfunded priority,
4 the sea launched missile. Hopefully, we get that approved
5 this year. Mr. Miller, could you talk about that a little
6 bit more, about the importance of it?

7 Mr. Miller: I think, Senator, that we need something
8 that our allies see is theater based that is around. That
9 we can't keep saying, don't worry, we have got these
10 systems in Omaha and in the States and deep at sea in the
11 ballistic missile force.

12 That we have something that we can show them and that
13 we can show the Russian and Chinese leadership that we have
14 capabilities that would match what they have, and
15 therefore, that would deter them from using those theater
16 and tactical nuclear systems.

17 Senator Tuberville: Thank you. Mr. Miller, do you
18 believe that pulling out of the JCPOA accelerated Iran's
19 breakout timeline, or do you believe the Iranians planned
20 to follow this pathway all along? Do you think they plan
21 on doing in any way?

22 Mr. Miller: I don't know what direction they are
23 going in, but as others of your colleagues have said, they
24 are particularly close to having a nuclear weapon, one way
25 or another.

1 Senator Tuberville: Thank you. It was good to hear
2 people talk, some of you talk about recruitment of STEM
3 programs. I come from the educational field. We are
4 struggling. Huntsville, Alabama, is looking for engineers
5 every day. We do a lot, obviously, with our defense.
6 And we are doing a few things to help accelerate engineers.
7 We have got to do that. We have got a majority of our kids
8 in this country can't even read, much less do math or
9 science.

10 So hopefully we will come up with some better programs
11 to accelerate that and come up with more engineers in the
12 future because we are going to need them. Thank you very
13 much.

14 Chairman Reed: Thank you, Senator Tuberville.
15 Senator Warren, please.

16 Senator Warren: Thank you, Mr. Chairman. So there is
17 no question that we are confronting a challenging security
18 environment. But the justifications we keep hearing for
19 buying nuclear weapons sound like a drumbeat for a new Cold
20 War, which strikes me as incredibly dangerous for the
21 United States and for global security.

22 One of the most common tactics used by boosters for
23 more nuclear spending is to rattle off the number of
24 weapons held by our adversaries and to cite projections of
25 how China, in particular, could increase its stockpile of

1 weapons in the coming years.

2 Now, according to this so-called logic, any time a foreign
3 power is catching up to us numerically, we are supposed to
4 shovel more money to defense contractors to get our own
5 numbers up. Ms. Creedon, you have decades of experience
6 working on nuclear weapons policy.

7 And of course, the size of a country's nuclear
8 stockpile is one key piece of information. But do you
9 think the best or only way to measure U.S. power is
10 counting our ability to match potential rivals warhead for
11 warhead, launcher for launcher?

12 Ms. Creedon: Thank you, Senator Warren. As you all
13 know, this is a very complicated question, and it goes far
14 beyond just who has 24 and who has 50. At a very basic
15 level, substantial imbalances would be worrisome, but it is
16 not just about nuclear weapons. It is about everything
17 that we have. It is about the whole concept of integrated
18 deterrence.

19 And it is about the quality of our weapons across the
20 board. It is about the quality of our people, the training
21 of our people. And at the end of the day, we have guidance
22 from our President as to what we hold at risk in a variety
23 of different circumstances.

24 And it is, can we meet our own goals and objectives?
25 Can we defend our country? And do our allies feel

1 confident in what we have so that they are safe under the
2 nuclear umbrella? So it is way more complicated than just
3 numbers.

4 Senator Warren: I appreciate that answer. And I am
5 concerned that focusing so much on the wrong measure may be
6 good for defense contractors' bottom lines, but it is
7 incredibly destabilizing. But there is an area where I
8 think we actually should be doing more talking about the
9 number of weapons we hold, not for the purposes of inviting
10 an arms race, but to avoid strategic miscalculation.

11 The Obama Administration took an important first step
12 in this regard when they declassified the size of our
13 nuclear arsenal. Disclosing this information helps U.S.
14 diplomats make the case to countries around the world that
15 the U.S. is continuing its efforts to reduce nuclear
16 arsenals and it enhances our credibility in calling for
17 other nuclear powers to be equally transparent.

18 Ms. Creedon, when the Trump Administration came in,
19 they denied requests to declassify this same information.
20 Do you think that the Trump Administration's decision was
21 helpful or harmful to nuclear deterrence and
22 nonproliferation?

23 Ms. Creedon: So, Senator, I am very supportive of the
24 declassification of the broad numbers, the total stockpile.
25 Rose and I were in the Obama Administration together when

1 many of these decisions were made. And so clearly we
2 supported this. I think it is important for transparency.

3 I think it has the potential to reduce some arms
4 racing based out of unknowns, if you will. But on the
5 other hand, you know, people will do what they want to do.
6 But I still think it is important for us to be transparent,
7 because even though it wasn't reciprocated during the Obama
8 Administration and this Administration has done it one more
9 time, I still think it is important. I mean, we do need to
10 lead in these areas.

11 Senator Warren: You know, we have to keep in mind
12 that Russia and China don't trust us either. And when we
13 hide this kind of information, we only add to their
14 paranoia about our national security strategy.

15 Thankfully, the Biden Administration has reversed this
16 harmful Trump Administration approach, and it has started
17 to put us back on the right path by declassifying the size
18 of our nuclear stockpile.

19 So let me ask you one more question, Ms. Creedon.
20 Would it be helpful or harmful to continue the
21 declassification of this information going forward?

22 Ms. Creedon: So right this minute, Senator, I think
23 it would continue to be helpful on an annual basis.

24 Senator Warren: Good. You know, some are saying we
25 should go back to the Trump era policy of keeping this

1 information secret. I think that would be a mistake. When
2 we keep this information classified, we give away our
3 ability to pressure other nuclear powers to disclose
4 information about their nuclear weapons.

5 And I see it as you know, this may be a small step,
6 but these are among the small steps that we need to take to
7 rebuild our reputation with our allies and with our
8 enemies. The Trump Administration undermined our
9 credibility significantly by withdrawing the United States
10 from the Iran deal and from the INF treaty. We need to
11 continue to embrace arms control as part of our deterrence
12 strategy.

13 And I am very concerned that we are moving in the
14 wrong direction when it comes to finding areas to
15 collaborate on shared interests on nonproliferation. Thank
16 you. Thank you, Mr. Chairman.

17 Chairman Reed: Thank you, Senator Warren. Senator
18 Cotton, please.

19 Senator Cotton: Ambassador Edelman, sorry I wasn't
20 here at the beginning, but I think I heard you reference a
21 fairly well-known phrase about the Russians, when we build,
22 they build. When we stop, they build. Did you use that
23 phrase?

24 Mr. Edelman: I quoted the late Harold Brown, Defense
25 Secretary in the Carter Administration, who famously made

1 that a marginal note on a memo on the nuclear balance.

2 Senator Cotton: Good. Thank you. I just want to
3 make sure that we got for the record, that that was not
4 Eric Edelman statement. As insightful as you always are,
5 but that was a statement from Jimmy Carter's Secretary of
6 Defense.

7 Mr. Ambassador, we heard a lot of talk today about a
8 new Cold War, as we always do when the conversation turned
9 towards nuclear weapons. I think I am on safer ground
10 saying you were around for the end of the Cold War.

11 Mr. Edelman: Yes, sir. You are dating me. I was.

12 Senator Cotton: Could you just remind some of those
13 who maybe weren't in office, who won the Cold War?

14 Mr. Edelman: You know, I think the truth is we all
15 won the Cold War, including the people of the Soviet Union,
16 who had a very brief respite from totalitarianism, only to
17 now have an authoritarian regime emerge in the last 20
18 years. But it was, I would say that the conditions for the
19 end of the Cold War were set by United States policy,
20 working with its allies.

21 Senator Cotton: Yes, and can you mention specifically
22 the role that nuclear weapons, and more broadly, military
23 strength played in the free world winning the Cold War?

24 Mr. Edelman: Well, I think we successfully deterred
25 any major aggression by the Soviet Union, certainly against

1 our treaty allies. And that, it seems to me, was a great
2 achievement. And it was undermined -- underpinned, excuse
3 me, by nuclear deterrence.

4 Senator Cotton: Another thing we have heard a lot of
5 talk about this morning, as we always do when we talk about
6 nuclear weapons, is a dreaded arms race. Ambassador
7 Edelman, can the United States avoid an arms race simply by
8 not competing? Or is it a matter of whether we are going
9 to win or lose an arms race if our adversaries are rapidly
10 building up their arms?

11 Mr. Edelman: As I said in my opening remarks, our
12 allies -- our adversaries have been building a pace over
13 the last 15 years, and we have been rather slow. I think
14 all of the members of the panel here would agree that we
15 have not been moving as quickly as we should to modernize
16 our force.

17 I think when it comes to the arms race issue, I think
18 it is fair to say that we do not have to match everything
19 that Russia does. There are things Russia is doing that I
20 would not advocate that we match or do.

21 For instance, we considered back in the bad old days
22 of the Cold War a nuclear powered cruise missile, and we
23 abandoned the idea because it was too dangerous. If Russia
24 wants to build a nuclear powered cruise missile that, you
25 know, spews nuclear radiation across Northern Russia when

1 it is tested, you know, they can do that.

2 We don't need to match it. But what we do need to do is
3 make sure that we have the fundamental -- meet the
4 fundamental requirements of deterrence, which as Frank and
5 I outlined in our opening statement, requires the ability
6 to have an assured second strike capability.

7 And I think all of us on the panel have said this
8 morning that that ultimately requires the modernization of
9 our existing triad.

10 Senator Cotton: Mr. Miller.

11 Mr. Miller: Senator, if I could make four quick
12 points. I think with respect, Senator Warren
13 mischaracterized the entire situation, the concern about
14 the Russian and Chinese buildup is the intent behind those
15 leaders trying to build a large nuclear force and why. And
16 it is obviously, it is one of intimidation.

17 Second, there is no arms race. They have been modernizing
18 their forces for the last 15 years. We are just starting
19 to enter that game. And we are not talking about matching
20 their numbers of warheads. What we are talking about is
21 modernizing our aging systems, which Ash Carter made clear
22 to this committee, if we don't modernize, those systems go
23 away.

24 So we ought to stay in the deterrent game by modernizing
25 our forces, putting in new forces to replace old ones, or

1 we get out of the game. And finally, to Eric's point, we
2 don't need to have parity with the Russians. If they want
3 to build more weapons, to build the -- make the rubble
4 bounce, that is their problem.

5 What we need to do is have sufficient warheads in our
6 capacity to hold what they value at risk and to hold what
7 the Chinese leadership values at risk. And in my judgment,
8 1,550 does not allow us to do that.

9 Senator Cotton: No, I don't think it does. Your
10 answers there bring back another nugget of wisdom for the
11 ages. That if we don't mistrust each other because we have
12 all these weapons, we have all these weapons because we
13 mistrust each other. And I would say that Vladimir Putin
14 and Xi Jinping have given the free world many reasons to
15 distrust them for a very long time. Thank you all.

16 Chairman Reed: Thank you, Senator Cotton. Senator
17 Kelly, please.

18 Senator Kelly: Thank you, Mr. Chairman. Ambassador
19 Edelman, Ukraine seems to be launching a rather effective
20 counter offensive against the invading Russian forces. And
21 it appears that the tide might be turning somewhat in their
22 favor. Well, we are going to have to see.

23 News reports suggests that the Ukrainians victory at
24 Kharkiv, in that region a couple of weeks ago resulted in
25 the Russian military retreating and then leaving behind a

1 large amount of equipment, including tanks and howitzers
2 and other artillery, as well as Russian troops just
3 abandoning their posts.

4 Certainly what we want to see. I think it is clear
5 that this invasion is not going well for Putin. It is not
6 going as he had hoped. And the question now is how will he
7 respond? Some are questioning whether he is capable of
8 using a nuclear weapon, even a low yield tactical weapon
9 for a psychological effect.

10 Ambassador, under what conditions would you assess
11 Russia would use a nuclear weapon in Ukraine? And if so,
12 what type and how?

13 Mr. Edelman: Senator Kelly, that, you know, is a
14 hypothetical question that requires a lot of speculation
15 because we just don't know the answer, because the answer
16 is inside Vladimir Putin's head.

17 I think most likely we would see something, and this
18 is something that Rose has written about, some kind of
19 demonstration shot probably over the Black Sea. Russian
20 doctrine talks about using these kinds of demonstrations of
21 capability, or possibly a very low yield strike with a
22 theater weapon, you know, on some transportation hub.

23 Senator Kelly: You are talking like half kiloton
24 sized?

25 Mr. Edelman: Might be a little larger than that.

1 But, you know, but it would -- you know, this gets into the
2 question of what we call tactical nuclear weapons. You
3 know, your description of whether it is tactical or
4 strategic is equal to the square root of your distance from
5 the weapon. So, you know, I think it is a mistake to just,
6 you know, call these merely tactical weapons, given the
7 impact that they could have on a place like Ukraine, even
8 at very low yield.

9 Senator Kelly: Do you think it should affect our
10 calculus going forward?

11 Mr. Edelman: I think it has to affect our calculus.
12 I think President Biden spoke to this the other night. And
13 I think actually he spoke reasonably well to this question,
14 which is to advise President Putin not to consider this as
15 an option and that the consequences would be incalculable.

16 Senator Kelly: Thank you, Ambassador. Ms. Creedon,
17 as the chair of this committee's Emerging Threats and
18 Capabilities panel, I have been focused on how technologies
19 like artificial intelligence and quantum computing can make
20 our weapons more effective.

21 And earlier this year, I spoke with the National
22 Nuclear Security Administrator Jill Ruby, about how we
23 could leverage emerging technologies to make our nuclear
24 weapons safer. And I know that you have a lot of
25 experience in the NNSA, as well as in the Defense

1 Department and on this committee, so I would like to ask
2 you kind of a related question.

3 How are novel technologies like AI, unmanned systems,
4 hypersonics, cyber space related systems, changing the
5 worldwide nuclear risk environment, and potentially
6 complicating deterrence?

7 Ms. Creedon: Well, Senator, thank you for that
8 question. I mean, obviously, this is one we could spend
9 several days on. But from a deterrence and also from a
10 safety and security perspective, things like AI, things
11 like cyber certainly cut both ways.
12 They can actually pose a -- they could pose a threat and
13 they can also help the U.S. understand what is going on.
14 So I will use one very small example here as a bit of a
15 hypothetical, and it does relate back to Senator King's
16 question. And it is like, are we still focused on threat
17 reduction and are we still focused on nonproliferation?
18 Historically, one of our issues has been we haven't been
19 able to address a proliferant or find until they have done
20 something. One of the hopes of particular AI is because of
21 the machine learning, because of the management of the
22 large data sets, we might be able early on to be able to
23 detect where anomalies are, where is some entity, where is
24 a country doing things that are not normal that because of
25 what they are doing or what they are buying, it may

1 indicate that they are a nuclear weapons aspirant.

2 So I think there are opportunities here. It is just a
3 very -- a very new world.

4 Senator Kelly: All right. Thank you. And thank you,
5 Mr. Chairman.

6 Chairman Reed: Thank you, Senator Kelly. Senator
7 Hawley, please.

8 Senator Hawley: Thank you, Mr. Chairman. Thanks to
9 the witnesses for being here. Ms. Gottemoeller, if I could
10 start with you. You argued in your written testimony that
11 Russia has a distinct advantage over the United States at
12 present in terms of its ability to upload nuclear warheads
13 and its ability to produce new warheads and missiles to
14 carry them. And you write further.

15 I am going to quote you now, "the United States is not
16 ready for a nuclear arms race and won't be ready until our
17 new production facilities come online in the late 2020s or
18 2030." Have I got that right? Is that an accurate
19 statement?

20 So let me just ask you about this, are you worried,
21 given all that, about China's upload and production
22 capabilities relative to ours, given that Beijing is in the
23 midst of a very pronounced nuclear build up?

24 Ms. Gottemoeller: Sir, China's nuclear capabilities
25 are in the course of being modernized. There is no

1 question about it. But the Russians are master ICBM guys
2 and they have been for decades now, and they have been
3 deploying heavy missiles that can carry a lot more
4 warheads, such as the SS-18 missile.

5 Now the SARMAT is being prepared for deployment. I
6 will just note, by the way, that both the SARMAT new heavy
7 ICBM and the Avantgard Hypersonic Glide Missile will fall
8 under the central limits of the New START Treaty. So they
9 will have some constraints on them in that way.

10 But I just want to note the mastery of upload, plus
11 the large number of warheads that the Russians have. The
12 Chinese certainly have that capability and that
13 understanding of how to go about it. They just don't have
14 the warheads that the Russians have.

15 Senator Hawley: Let me ask you this, you also say in
16 your written testimony that the U.S. should not be the one
17 to launch a nuclear arms race, but it must be ready to
18 respond immediately to others who do. Is it fair to say
19 that our ability to deter Russia or China from engaging in
20 an arms race rests in part on our expanding our own nuclear
21 forces?

22 Ms. Gottemoeller: Sir, I am not sure we need to
23 expand our nuclear forces, but we do need to modernize
24 them. And we do need to put in place the industrial
25 capacity to be able to build warheads and build missiles.

1 And I really underscore this point, that our industrial
2 capacity has been allowed to lapse.

3 And that goes -- I agree with my colleagues who have
4 spoken about the necessity of the expertise in addition to
5 the missile facilities, the warhead facilities. We need
6 the experts who are everything from the welders that Mr.
7 Miller referred to, up to the high level engineers who help
8 us to design and build our nuclear warheads.

9 Senator Hawley: Let me ask you about a follow on to
10 the New START Treaty. Is your argument that a follow on is
11 in part a way to help delay further Russian expansion until
12 we have restored our own production capability?

13 Ms. Gottemoeller: It gives us predictability, sir,
14 about what the Russians are up to into the decade. I am
15 assuming that an agreement or treaty to follow New START
16 would go into the 2030s, and our modernization is extending
17 into the 2030s till almost 2040. To buy that kind of
18 predictability into the next decade, in my view, is an
19 important goal and in the national security interest of the
20 United States.

21 Senator Hawley: Given that, I mean just given the
22 strategic balance there, what would Russia's interests be?
23 I mean, why would we expect Russia to adhere to any such
24 treaty, given their current, you might argue, strategic
25 advantage in this area? I mean, why not just wait this out

1 and then come to the table later with even more leverage?

2 Ms. Gottemoeller: Just as we are concerned about
3 Russian capabilities to modernize, they are very concerned
4 about our ability to modernize. They think of us as 10
5 feet tall. So I think we need to live up to that
6 reputation, to be honest, sir, and get on with our own
7 modernization. But that is the reason, I think, that they
8 would come to the table. They want to make sure that we
9 are not building up in a way that they cannot stomach. So
10 that is the main point.

11 Senator Hawley: That is helpful. Thank you very
12 much. Mr. Miller and Ambassador Edelman, if I could turn
13 to you, you write in your joint statement that being able
14 to absorb a first strike and retaliate against an aggressor
15 while also holding in reserve sufficient forces to deter
16 other near-peer competitors, may in the future require
17 larger numbers of deployed warheads than currently allowed
18 under New START. Can you elaborate on that for me? Both
19 of you -- either of you.

20 Mr. Miller: Yes, sir. So New START was done in 2010
21 when Russia was not a threat and China wasn't in the
22 picture. Fast forward 12 years, Russia is a threat, China
23 is a threat. The 1,550 metric, in my judgment, does not
24 apply to say a couple of years from now when we have to
25 deter simultaneously Russia and China.

1 Senator Hawley: Ambassador, anything you would like
2 to add?

3 Mr. Edelman: Yes, Senator. But I think before you
4 joined us, we talked a little bit earlier in the hearing
5 about the requirement, a fundamental requirement of
6 deterrence is to be able to absorb a first strike and have
7 sufficient forces in reserve to inflict unacceptable damage
8 on the adversary. If you posit a Russian first strike and
9 are riding it out, our retaliation under 1,550, I think,
10 would essentially leave us denuded of any, you know,
11 reserve to deter the PRC.

12 And we also, as my colleague has pointed out earlier,
13 we can't completely rule out at some point that Russia and
14 China, given their limitless partnership, as Xi Jinping and
15 President Putin have described it, working together against
16 the United States. Right now, you see Xi distancing
17 himself a little bit from the failures in Ukraine, but we
18 don't know what, you know, what will happen 5 or 10 years
19 from now.

20 Senator Hawley: My time has expired, but this is a
21 very, very important topic. And I want to ask you more
22 about how we can increase our arsenal without getting into
23 the kind of arms race that I was just talking about with
24 Ms. Gottemoeller. So I will give that to you for the
25 record and maybe a few other questions too. Thank you all

1 for being here. Thank you, Mr. Chair.

2 Chairman Reed: Thank you, Senator Hawley. Senator
3 Hirono, please.

4 Senator Hirono: Thank you, Mr. Chairman. I want to
5 thank the panelists for a very enlightening discussion. So
6 this is for the panel. During last Thursday's ASC hearing,
7 my colleagues and I asked several questions related to the
8 potential reestablishment of the Navy's sea launched cruise
9 missile nuclear program, SLCM.

10 And I have expressed my concern regarding the
11 necessity for restarting such a program, and that the
12 development of such a low yield or tactical nuclear cruise
13 missile could lead to a dangerous new kind of nuclear arms
14 race.

15 Given the importance of nonproliferation, are there
16 other weapons or tactics that the U.S. can use to
17 accomplish the same strategic objectives as SLCM without
18 creating new nuclear weapons? Anybody on the panel, care
19 to respond?

20 Mr. Miller: I can start, Senator. With respect to a
21 new nuclear arms race, we are talking about Russia, which
22 has dozens of new tactical nuclear systems. The same is
23 true of China. The United States has some air delivered
24 bombs in Europe, period, full stop. The development of a
25 limited number of sea launched nuclear cruise missiles

1 would not contribute to an arms race.

2 It would serve as a modest offset to Russian and
3 Chinese systems already deployed. And I think that would
4 serve as an enhanced deterrent and as a reassurance to our
5 allies in Europe and in Asia, many of whom have called on
6 us to deploy such a system.

7 Ms. Gottemoeller: Senator, if I may, I would like to
8 comment briefly. I actually disagree with my distinguished
9 colleague on this one. I do think that our air launched
10 cruise missiles, which we are modernizing in a very
11 intensive way, and I expect to see that to be a very
12 significant capability, provide that kind of flexible
13 forward deterrent capability if we need it.

14 So I do not see the need for a nuclear armed sea
15 launched cruise missile. I do believe in the role of
16 conventionally armed sea launch cruise missiles. They are
17 really a foundational capability for the U.S. Navy.

18 I also think that when we think about this question,
19 we need to take into account the operational challenges
20 that the Navy faces in certifying its ships and submarines
21 for nuclear curage, and how difficult it can be to sustain
22 ops tempo when these nuclear capabilities have to be taken
23 into account.

24 And that is the conduct of a naval man, obviously, or
25 a naval woman is something I think that the Navy is

1 competent to comment on. But that is my impression that
2 there is a certain heavy lift that has to be done to
3 redeploy nuclear weapons of this class on naval platforms.

4 Senator Hirono: And that I think you are -- not I
5 think, I know you are in agreement with Secretary Austin.
6 All of you have noted that it is really important for us to
7 modernize our nuclear triad. So do you believe that the
8 U.S. should prioritize modernizing the nuclear triad over
9 expanding its nuclear arsenal with the program such as
10 SLCM?

11 Ms. Creedon: So I will be happy to jump in on that
12 one. So right now, the clearly the most important thing is
13 the modernization of the program of record, which does not
14 include the SLCM. That said, there are other issues
15 associated with the SLCM that certainly need to be
16 addressed.

17 So operational issues with that, how it would be used
18 in a deterrence value, how our allies would see it. But
19 the other thing is a more practical thing, and that is
20 really with the industrial base. So the warhead for the
21 SLCM would be the exact same warhead that is now being
22 modernized for the new cruise missile. And there is only
23 so much capacity for warhead production at NNSA.

24 And so if you were going to extend the production run
25 for the 80-4, which is the warhead, to make more, then you

1 have to ask yourself, well, what else are you giving up in
2 the context of our overall arsenal. So, you know, there is
3 a lot that needs to be understood with respect to this
4 before there is a decision to really build and field this.

5 Mr. Miller: So I think it is important to understand
6 that SLCM, if it exists, is in the out years. Clearly,
7 building the triad systems now is the priority. And Ms.
8 Creedon just has talked about the warhead issues. But in
9 fact, from the early 1980s until the end of the Cold War,
10 we deployed nuclear armed cruise missiles on our submarines
11 and for some period of time on our surface ships, and the
12 Navy was perfectly capable of doing that. So the Navy
13 could, if it was in the national interest, do that again.
14 That decision again remains in the out years.

15 Senator Hirono: Thank you for that clarification. I
16 just want to mention, Mr. Chairman, that I really
17 appreciate the fact that our panelists have said that the
18 nuclear arms discussion is not just about parity, that it
19 is basically a whole of Government approach that we need to
20 employ, and that this requires very strong diplomatic
21 efforts as we add intel efforts, as we try to determine
22 what is actually going to deter China, North Korea, or
23 Russia. Thank you, Mr. Chairman.

24 Chairman Reed: Thank you, Senator Hirono. Senator
25 Peters, please.

1 Senator Peters: Thank you, Mr. Chairman. And thank
2 you to each of our witnesses here today for an interesting
3 conversation. I want to talk a little bit about
4 cybersecurity, which has been raised. Ambassador Edelman,
5 in your joint statement with Mr. Miller, you discuss the
6 potential of cyber-attacks to disrupt our second strike
7 retaliatory capability, interfering with nuclear command
8 and control.

9 This obviously adds a whole new dimension to the
10 concept of deterrence and warfare generally. If you could
11 talk a little bit about that, and specifically, do you
12 believe that cyber warfare will also impact initial launch
13 sequences and potential vulnerabilities that our
14 adversaries would have?

15 Mr. Edelman: Senator Peters, thank you for the
16 question. I mean, there are a lot of unknowns about how
17 cyber warfare will interact with, you know, nuclear weapons
18 systems. But one of the reasons why I am such a strong
19 advocate of modernizing the ICBM leg of our triad with the
20 new Sentinel ICBM is that when we built the Minuteman III
21 in the late 60s, it was in the pre-internet age.
22 And so to be able to have confidence that we have a system
23 that is, you know, not only fit in a cyber environment,
24 that we can preserve our command and control of it, but
25 also electronic warfare and other things, we need to go

1 ahead and modernize. You know, I am not an expert on
2 cyber, so I don't want to, you know, pretend that I know
3 that much about how it might interact.

4 But obviously, we have to be very vigilant about that
5 aspect because, again, going back to earlier discussion,
6 nuclear command and control is absolutely essential to
7 underpin deterrence.

8 Senator Peters: Well, as we talk about that -- and
9 Ms. Creedon, I think you answered a question with one of my
10 colleagues that related artificial intelligence and the new
11 systems that go forward.

12 One thing we know about the future of warfare is the
13 speed of decision making will continue to advance rapidly,
14 particularly when you get autonomous weapons systems that
15 will be flying and may make kill decisions by taking a
16 human out of the loop because speed will be the difference
17 between staying alive and dying.

18 What happens is we see the integration of AI systems
19 not just in our systems, but in systems that the Russians
20 or North Koreans or other will put into effect. It seems
21 to me that that opens up the opportunity for a catastrophic
22 miscalculation that may be hard to unwind. What are your
23 thoughts, Ms. Creedon, on that?

24 Ms. Creedon: Well, I certainly agree with that. And
25 just as a very fundamental philosophy, I would certainly

1 hope that AI was, in terms of autonomous warheads,
2 autonomous weapons systems was never applied to nuclear,
3 because I think it is absolutely essential that there
4 remain people in that loop for nuclear. If I could,
5 though, I also would like to point out something different.

6 And that is really the internal cyber thing that we
7 have to worry about. And that is in the context of our
8 industrial base of new warheads. That making sure that as
9 we build our own systems, that they are sufficiently robust
10 from attacks and that we are sufficiently cognizant of all
11 of the electronics that go into these so that we know their
12 pedigree, and that we are not setting up our
13 vulnerabilities for future cyber-attack.

14 Senator Peters: Yes. Yes, please.

15 Ms. Gottemoeller: Just a quick comment, Senator
16 Peters. I agree with what Ms. Creedon had to say about
17 never having the absence of a man in the loop for nuclear
18 decision making. This is an area that I think is very
19 important to pursue in discussions with the Russians and
20 the Chinese. We need some normative standards set here.
21 Of course, it is something you can never monitor and verify
22 in the way you can an arms control treaty. But just having
23 them agree with us that this is an area that should be
24 immune to attack I think is very important.

25 Senator Peters: Appreciate that. And I agree. And

1 it should probably be a part of an arms treaty. Obviously,
2 verifying that may be very difficult, but there is
3 certainly a big movement to figure out how we deal with
4 lethal autonomous weapons, because we know that other
5 countries may not be constrained by some of the ethical
6 constraints that we place. But at some point, if they go
7 that distance, we will be under a lot of pressure to make
8 sure that we can respond.

9 Otherwise, we put our men and women at great risk to a
10 system that can operate in a nanosecond. So to what extent
11 should that be part of nuclear treaties that we think about
12 this? Because clearly this is coming. This is not -- this
13 is not if, this is when.

14 Ms. Gottemoeller: I think going forward we should be
15 looking to many different instruments, treaties and
16 agreements constraining nuclear weapons, but also
17 agreements with regard to normative principles of this
18 kind. But it probably doesn't need to be in the same
19 document, but we need to have a set of documents that --
20 and one of them must clearly address this kind of issue.

21 Senator Peters: Okay. Thank you. Oh, yes, Ms.
22 Creedon.

23 Ms. Creedon: I just want to add something, because
24 earlier we had a discussion about where is the future of
25 arms control and whether we need one very large treaty or

1 more new bilateral treaties. This is one, I think, that
2 really does lend itself to a much larger bilateral
3 international agreement, that countries could agree that
4 this is not, in other words nuclear AI, nuclear autonomous
5 vehicles, is not somewhere to pursue, somewhere to go.

6 Senator Peters: Great. Thank you very much. Thank
7 you, Mr. Chairman.

8 Chairman Reed: Thank you, Senator Peters. Senator
9 Sullivan, please.

10 Senator Sullivan: Thank you, Mr. Chairman. And I
11 want to thank our panel, many of whom I have gotten to know
12 well over the years. Served with some. And Dr.
13 Gottemoeller, nice to see you again after our Aspen
14 meeting. I want to continue this discussion on the trying
15 to break out -- but I want to ask the question in the
16 context -- I have been focusing a lot on the implications
17 of a war in the Taiwan Strait.

18 One thing, I think that a lot of people are missing,
19 but I would like your review on it or your views on it, is
20 this breakout, I think is actually very related to Taiwan.
21 Meaning if the Chinese are going to look to possibly invade
22 Taiwan at the end of this decade or earlier, they are going
23 to want to have some kind of nuclear deterrent posture with
24 us.

25 So I think it is actually driven by that. But what do

1 you think? And maybe we will start with you, Mr. Miller,
2 and just go down the line quickly. The breakout hasn't
3 been discussed in the context of an invasion of Taiwan, and
4 I think it is directly related.

5 Mr. Miller: I believe it is directly related, but I
6 think that today China already has the capability to
7 destroy our population base, our cities. The question is,
8 where is Chinese strategy going in the future? Are they
9 seeking to have some sort of a counterforce capability in
10 that overall deterrent threat against us into intervening
11 in Taiwan? But I think that is the driver. I think you
12 are absolutely correct. And there is a bit of their
13 needing to have force to deter Russia as well, because the
14 there is a rivalry there.

15 Senator Sullivan: Ambassador.

16 Mr. Edelman: Senator Sullivan, I agree with you. And
17 this is something that Frank and I addressed in our formal
18 statement submitted to the committee. The attention in the
19 Chinese buildup has gone largely to the strategic and
20 particularly the FOBs, which we had a discussion of
21 earlier.

22 But there is also a buildup of tactical forces
23 opposite Taiwan. And I think we have to pay attention both
24 to the strategic balance, you know, globally, but also the
25 theater balance, in part because I think the Chinese are

1 trying to do what the Soviets did in the Cold War, which is
2 put stress on the reliability of our extended deterrent
3 guarantees and intimidate our allies and intimidate us with
4 a essentially an effort to make sure we don't exercise a
5 counter intervention capability if they try and invade
6 Taiwan.

7 Senator Sullivan: Let me let me follow up with the
8 question again for the whole panel. And if you get -- the
9 two who didn't get to answer, my first question, I want to
10 take it in order, but because it is a follow up,
11 Ambassador, to your question. I was kind of dismayed to
12 see that President Biden is, like President Obama was at
13 the end of his tenure, is toying with this no first use
14 idea.
15 Biden's nuclear review omits no first use. But it seems
16 like they are still toying with this idea. What do you
17 think that does, as it relates to our allies, particularly
18 our allies in Asia, related to your point with regard to
19 not just Taiwan, but an Administration that once again is
20 toying with this concept?

21 And can I get each of yours definitive answer, it can
22 just be one sentence, on whether you agree with a no first
23 use doctrine, or you think it would undermine deterrence
24 and our allies? So, Ms. Gottemoeller, can I start with
25 you, doctor --?

1 Ms. Gottemoeller: Yes, certainly, Senator. Good to
2 see you again after our meeting in Aspen. By the way, I am
3 not a doctor, so you can just say, Ms. Gottemoeller or just
4 Rose.

5 Senator Sullivan: You never go wrong when you call
6 someone doctor or ambassador, I found in this job.

7 Ms. Gottemoeller: Well, thank you very much. I would
8 just underscore what you had to say about what is evidently
9 in the nuclear posture of view of the Biden Administration.
10 It hasn't been publicly released yet, but the fact sheet we
11 have out of the DOD clearly does not refer to any kind of
12 no first use policy.

13 Senator Sullivan: Okay. So, you are against that?
14 You would be against --?

15 Ms. Gottemoeller: What I agree with is the notion
16 that is in fact sheet that says the possibilities of
17 nuclear use are extremely remote. And I absolutely agree
18 with that. As far as what was put down on the Posture
19 Review, it looks like it doesn't touch the no first use
20 issue.

21 Senator Sullivan: Ms. Creedon.

22 Ms. Creedon: So, Senator, I certainly agree that the
23 conditions are not appropriate for a no first use policy.
24 Ironically, this was something that the Obama
25 Administration wrestled with at the end and determined that

1 the conditions weren't there then, and the conditions now
2 are even worse.

3 Senator Sullivan: It just keeps popping up, though, I
4 mean, as you know. Ambassador, Mr. Miller, I just want to
5 -- and any other comments on allies, Taiwan, or --

6 Mr. Edelman: Just a brief one. This is something
7 Frank and I have actually written about in the past. I
8 don't see the value of a no first use pledge. I don't
9 think our adversaries would take it seriously to begin
10 with. I don't think it really buys us anything. But it
11 would be, I think, discomfoting to our allies and
12 undermine extended deterrence.

13 Mr. Miller: So I used to joke that Woody Hayes said
14 that a forward pass would have three things happen, two of
15 which were bad. A no first use policy has four things that
16 would happen, and they are all bad.

17 One, our allies would be disheartened because they would
18 believe the nuclear umbrella is shrinking. Two, those
19 allies who are capable of building their own nuclear
20 weapons will take a step closer to building their own
21 nuclear weapons because they won't believe in us.

22 Three, the Russians and Chinese will never believe
23 that we have adopted that policy. And four, the Russians
24 and Chinese will not change their own first use policies
25 based on a U.S. no first use pledge. So I think it is a

1 terrible idea, and I have opposed it all along.

2 Senator Sullivan: Excellent answer. Thank you, Mr.
3 Chairman. Great panel.

4 Chairman Reed: Thank you, Senator Sullivan. Senator
5 Rosen, please.

6 Senator Rosen: Thank you, Chairman Reed. It is
7 really a great hearing. I want to thank all of our
8 witnesses for their expertise, your service, and for being
9 here today. But I am going to talk a little bit about, of
10 course, some things in Nevada because Nevada National
11 Security Site, of course, right in our backyard.

12 So Ms. Creedon, the remote sensing laboratory both at
13 Nellis Air Force Base and Joint Base Andrews provides
14 radiological emergency response teams along the West and
15 the East Coast, respectively, who stand ready to deploy
16 anywhere in the world.

17 These personnel and those of the Nevada national security
18 site are the Nation's experts in detecting, locating dirty
19 bombs, loose nukes, sources of radiation, and determining
20 the origin and attribution through nuclear forensics.

21 I was recently speaking with NNSA about the remote
22 sensing laboratory and the radiological sensors we have
23 provided Ukraine as Russia has seized control of several
24 Ukrainian nuclear power plants as part of its invasion, and
25 of course, we know continues to threaten them.

1 So, Ms. Creedon, from your time at NNSA and DOD, can
2 you speak to the interagency and multinational effort that
3 is occurring to prevent a nuclear disaster from happening
4 in Ukraine?

5 Ms. Creedon: Thank you, Senator. As you have noted,
6 the remote sensing lab is an incredibly capable lab. It is
7 a very small lab as far as these things go, but it is a
8 very capable lab.

9 But it works also in a much larger system of
10 laboratories at the Department of Energy and the NNSA, as
11 well as with cooperation from the State Department and DOD,
12 to put together and develop, do the research, do the
13 deployment, do the acquisition of a whole suite of sensors
14 for radiation detection on the ground, on personnel.

15 We have radiation detectors in space. But it is
16 essential that we understand what is going on there from a
17 public health perspective, if the Russians, as Rose
18 mentioned earlier, do something really awful at these two
19 sites, including the second one that they have now shot at.

20 Senator Rosen: Thank you. I want to continue on
21 this. So Ms. Creedon, the United States must deter two
22 nuclear capable competitors for the first time in history,
23 a fact which is widely discussed including here today of
24 course.

25 So Ms. Creedon, how does having to defend against multiple

1 nuclear capable competitors affect the Nation's strategic
2 requirements? And should we reorient our postures as a
3 result?

4 And when you look at the range of diverse and
5 increasing nuclear risks potentially around the globe, how
6 do we -- how should we be prioritizing these threats?
7 Which ones are most concerning to you?

8 Ms. Creedon: Well, certainly taken together, Russia
9 and China, particularly on the trajectory that they are
10 both on with respect to their nuclear systems, the variety
11 of their nuclear systems, and the number of their potential
12 systems do present a threat to the U.S.

13 But my first priority for the U.S. is to make sure
14 that the current modernization program is continued on
15 pace, on track, that it is funded, and that it is
16 supported. And the second thing is that the systems that
17 we have now, which are very old, that they be sustained
18 because, you know, my assumption is that some of the new
19 ones could very well be late.

20 And sustaining these old ones is absolutely essential.
21 But I also think we need to look broader. So our
22 deterrence is more than our nuclear deterrent, even though
23 our nuclear deterrent is at the heart of it.

24 So we do have to look broader to look at how does the
25 U.S. present a full deterrence picture to the -- to all of

1 our adversaries, at the same time assuring our allies that
2 we are, in fact, committed to them and protecting them and
3 that we have the capability to deter. So it is way more
4 than just the nuclear part of it.

5 Senator Rosen: Thank you. Ambassador Edelman, same
6 question to you. How should we be prioritizing these
7 multiple threats, in your opinion?

8 Mr. Edelman: Well, I think we have to prioritize
9 first the threat that remains the only existential threat
10 to us today, which is Russia. But China is moving apace.
11 And so, as my colleague Mr. Miller said, I think we have to
12 rethink what might be required to hold both at risk
13 simultaneously.

14 And we do have lesser included cases that, you know,
15 have been mentioned during the course of this hearing,
16 including North Korea and Iran, as well as the terrorist
17 threat that Senator King mentioned.

18 And I would add on that point, it does seem to me that we
19 need to think about -- because nuclear weapons, while, as
20 Senator King pointed out, you can look up pretty easily on
21 the internet how to build a nuclear weapon in theory, we
22 are lucky that it is actually not that easy as an
23 engineering feat to do.

24 So, the most likely path for terrorists to get their hands
25 on nuclear weapons is to get them from a State actor that

1 has them. And I think in that regard, North Korea is a
2 particular -- particularly worrisome threat, but Pakistan
3 is as well. And in fact, if I had to pick one place where
4 I would most be worried about it would be Pakistan.

5 And it is one reason why I, for one, am very sorry
6 that we no longer have a presence in Afghanistan, because
7 to me that is the most likely route, the loss of control of
8 nuclear weapons in Pakistan, that terrorists get their
9 hands on one.

10 Senator Rosen: Thank you. I know I am out of time,
11 so I am going to be submitting some questions for the
12 record based on the discussion here today, what legs, for
13 Ms. Creedon, of the triad do we recommend that we focus our
14 investments on. And of course, building on Senator Peters'
15 cybersecurity question. So, thank you.

16 Chairman Reed: I thank you, Senator Rosen. Senator
17 King has requested an additional question. Senator King,
18 please.

19 Senator King: Ambassador Edelman, what is our
20 doctrine with regard to response to a use of a tactical
21 nuclear weapon? The President made a statement to Mr.
22 Putin. Is that it or is there a doctrine? What is our
23 deterrent strategy for the use of a low yield nuclear
24 weapon, either as a demonstration in the middle of the
25 Arctic Ocean or in terms of a strike on a city in Ukraine.

1 Mr. Edelman: Senator, I think, you know, our
2 deterrent posture has always been based on the notion of
3 calculated ambiguity. That we would determine at the time
4 of use, you know, how we would respond to a weapon and a
5 use of a weapon. And I think that remains very useful
6 today.

7 I think this goes back to some of the foundational
8 thinking about deterrence in the Cold War, and in
9 particular the work of Thomas Schelling, who famously, in
10 Strategy of Conflict, wrote in 1960 that the risk that
11 leaves something to chance in the mind of your adversary,
12 the notion that if they do this, they are moving down a
13 road the consequences of which they cannot calculate, is
14 perhaps the strongest deterrent that we have. And in that
15 regard, I thought the President's statement to Scott Pelley
16 on 60 Minutes on Sunday was exemplary.

17 Senator King: Mr. Miller.

18 Mr. Miller: So, Senator, I think it is a great
19 question, but at the end of the day, it comes down to the
20 President of United States. All of our jobs, and I have
21 devised for plans, I have helped make sure that they were
22 implemented correctly, is to provide the President options,
23 period, full stop.
24 Whoever the President is -- and Mr. Sullivan and I, Senator
25 Sullivan and I have worked together. We provide the

1 President options, and you don't box a President in as to
2 what option he is going to take. So there is no open and
3 shut, black and white answer to your question.

4 A President at the time, if an adversary enemy used a
5 nuclear weapon, would decide what to do, whether it was a
6 short range weapon, a medium range weapon, or a long range
7 weapon.

8 Senator King: And I love your comment, Mr.
9 Ambassador, that your determination of what is tactical
10 depends upon the square root of your distance from the
11 explosion. I think that is a very astute observation.
12 Thank you very much. Thanks to all the panel. Really
13 fascinating hearing and great insights.

14 Chairman Reed: Well, thank you very much, Senator
15 King. And ladies and gentlemen, thank you for an
16 extraordinarily informative discussion. The purpose was to
17 reinvigorate and reengage individuals in a serious
18 discussion of the new nuclear challenges we face, which are
19 different than the Cold War.

20 And, but they are just as potentially consequential.
21 And you have applied some incredibly important insights to
22 this discussion. This is the beginning, not the end. We
23 have to keep this topic, as some have suggested, on the
24 front page and seriously think about what is similar to the
25 Cold War and what is very much different.

1 One issue that has come through very clearly, though,
2 is the need for modernization of our triad together with
3 our industrial base. And I concur entirely with that. I
4 think also, too, there was a, I think, discussion about
5 arms control is something that is a very difficult process,
6 but something that should be pursued.

7 As I think Ambassador Edelman pointed out, it took 10 years
8 of -- around the table before the Russians decided that it
9 was in their interest to settle it. It might take that
10 long with the Chinese. But I think we have to continue to
11 do that.

12 With that, let me thank you all for excellent
13 testimony, and adjourn the hearing.

14 [Whereupon, at 11:32 a.m., the hearing was adjourned.]

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