

Stenographic Transcript
Before the

Subcommittee on Strategic Forces

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

HEARING TO RECEIVE TESTIMONY ON
UNITED STATES NUCLEAR DETERRENCE POLICY
AND STRATEGY

Wednesday, June 16, 2021

Washington, D.C.

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1 HEARING TO RECEIVE TESTIMONY ON UNITED STATES NUCLEAR
2 DETERRENCE POLICY AND STRATEGY

3
4 Wednesday, June 16, 2021

5
6 U.S. Senate

7 Subcommittee on Strategic

8 Forces

9 Committee on Armed Services

10 Washington, D.C.

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12 The subcommittee met, pursuant to notice, at 4:31 p.m.
13 in Room SR-222, Russell Senate Office Building, Hon. Angus
14 King, chairman of the subcommittee, presiding.

15 Subcommittee members present: Senators King
16 [presiding], Warren, Rosen, Kelly, Fischer, Rounds, and
17 Sullivan.

1 OPENING STATEMENT OF HON. ANGUS KING, U.S. SENATOR
2 FROM MAINE

3 Senator King: We are talking today about the United
4 States nuclear deterrence policy and strategy. I want to
5 thank the witnesses today for appearing at this hearing to
6 give their views on our nuclear deterrence policy and
7 strategy. Together, these witnesses represent a wealth of
8 experience in public service and academic thought. This is
9 our second hearing on nuclear deterrence and I believe it is
10 critical to expose the public to a diverse set of viewpoints
11 on this issue.

12 I wrote my college thesis on nuclear deterrence 55
13 years ago, but the topic remains as relevant today as it was
14 back then; however, the environment in which U.S. deterrence
15 policy operates has significantly changed. We have moved
16 from a Cold War stance with the Soviet Union to a multipolar
17 nuclear world with space and cyber domains that also affect
18 strategic stability.

19 While we haven't built new types of nuclear weapons or
20 delivery vehicles in the past 30 years, other nations, such
21 as Russia, and especially China, have done so. I hope this
22 hearing can bring out the implications of these new and
23 often disturbing trends.

24 While nuclear deterrence may seem to be a simple
25 concept, it is, in practice, a complicated system with many

1 different elements, including the thousands of women and men
2 who contribute to this mission in the Departments of Defense
3 and Energy. We owe it to them, especially those in uniform,
4 whose mission is no fail 24/7, to educate the public on a
5 topic that is now undergoing significant change.

6 We will open with 5-minute witness statements and then
7 go to 5 minutes of questions between each side of the table
8 for each member.

9 Senator Fischer and I are going to have to pop in and
10 out because there is a third vote that is probably starting
11 right about now, but it will only take a couple of minutes.

12 So, with that, Ranking Member Fischer, for your opening
13 comments.

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1 STATEMENT OF HON. DEB FISCHER, U.S. SENATOR FROM
2 NEBRASKA

3 Senator Fischer: Thank you, Mr. Chairman.

4 And welcome to all of our witnesses.

5 Ms. Gordon Hagerty, it is wonderful to see you again
6 and I am happy that you, along with Ms. Creedon, are here
7 today to be able to share your expertise about the
8 infrastructure that we need.

9 Too often, conversations about deterrence and nuclear
10 posture focus exclusively on military capabilities, but as
11 Admiral Richard testified before this committee earlier this
12 year, he said that simply counting warheads is a crude
13 measure of a nation's overall strategic capability. The
14 state of a foreign nation's nuclear infrastructure must also
15 be included in our assessments of their nuclear programs and
16 incorporated into our analysis of that strategic stability.

17 In the same way, the state of our own infrastructure
18 must be discussed as we examine our own posture. And while
19 previous nuclear posture reviews have concluded that a
20 responsive nuclear infrastructure is a key component of
21 sustaining our nuclear deterrent, pacing threats, and
22 hedging against both technological surprise and geopolitical
23 uncertainty, progress towards achieving this goal has been
24 uneven and much work remains to be done.

25 So, we look forward to hearing more about this both

1 from you on this issue as we consider the programs and
2 policies and the overarching strategy behind our nuclear
3 deterrent.

4 Thank you, all.

5 Senator King: Each of you has a very distinguished
6 background, but in the interests of time, I am not going to
7 list your resume, except to introduce you according to your
8 current association.

9 We are going to start with Tom Z. Collina, Director of
10 Policy, at the Ploughshares Fund.

11 Mr. Collina, the floor is yours.

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1 STATEMENT OF TOM Z. COLLINA, DIRECTOR OF POLICY,
2 PLOUGHSHARES FUND

3 Mr. Collina: That would be helpful. Thank you very
4 much.

5 Mr. Chairman, Senator Fischer, members of the
6 committee, thank you for inviting me. I am delivering this
7 statement on behalf of myself and former Secretary of
8 Defense, Bill Perry, who regrets he could not be here today,
9 and I request permission to submit the statement for the
10 record.

11 Senator King: Without objection.

12 [The statement of Mr. Collina follows:]

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1 Mr. Collina: And I would like to thank you, Mr.
2 Chairman, for holding this second hearing on nuclear policy
3 and I appreciate your willingness to hear from a wider
4 spectrum of speakers and views and I hope this sets a norm
5 for the committee going forward, and I really appreciate it.

6 Let me start by saying, we welcome the statement made
7 today by Presidents Biden and Putin in Geneva, that a
8 nuclear war cannot be won and must never be fought. They
9 also reaffirmed their commitment to arms control and their
10 attention to seek new arms control talks and we hope those
11 talks succeed.

12 Many of the ideas I will talk about today are based on
13 the book Dr. Perry and I co-wrote, called, The Button: The
14 New Nuclear Arms Race and Presidential Power from Truman to
15 Trump. The main conclusion of that book is that U.S.
16 nuclear policy is focused on the wrong threat and by
17 focusing on the wrong threat, we have adopted the wrong
18 policy.

19 U.S. nuclear policy has for decades been built on one
20 central assumption: that Russia might launch a disarming
21 first nuclear strike, a bolt from the blue, against the
22 United States. But looking back at the Cold War, we found
23 no compelling evidence that either side would have launched
24 a surprise attack and as STRATCOM Commander Richard recently
25 said, a bolt out of the blue is unlikely.

1 Yet, by preparing for this unlikely threat, U.S. policy
2 creates a greater danger, that these forces could be used by
3 accident. This is not just a theoretical possibility. We
4 came very close to nuclear disaster several times during the
5 Cold War and the advent of cyber threats only increase the
6 risks of false alarms and mistakes.

7 So, in our view, the Biden administration now has an
8 opportunity to modify dangerous nuclear policies and give
9 the President more decision time and here is how. First, we
10 should end sole authority for starting nuclear war. The
11 last weeks of President Trump's term in office demonstrated
12 the extreme danger of giving one person unilateral authority
13 over launch. In the state of emotional turmoil, the
14 President could have ordered the use of nuclear weapons.
15 This danger was so acute that House Speaker Nancy Pelosi
16 actively looked for ways to prevent, quote, the unstable
17 President from accessing the launch codes and ordering a
18 nuclear strike, unquote.

19 Mr. Chairman, we have learned this lesson too many
20 times now. Presidents should not have sole authority over
21 nuclear war.

22 Second, the administration should declare sole purpose.
23 The Biden campaign stated that the sole purpose of the U.S.
24 nuclear arsenal should be deterring, and if necessary,
25 retaliating against a nuclear attack. To provide the

1 greatest benefit, a sole-purpose policy should clearly
2 prohibit the United States from starting nuclear war, should
3 rule out preemptive nuclear attacks and prohibit launching
4 nuclear weapons before an unconfirmed attack arrives. A
5 sole-purpose policy will require consultations with allies,
6 but allies should not be given veto over U.S. policy.

7 Third, the Biden administration should take land-based
8 missiles off alert. If early warning sensors indicate that
9 missiles are en route to the United States, the President
10 would have to consider launching ICBMs before those missiles
11 arrive. This is known, of course, as launch on warning.
12 But, as you know, once ICBMs are launched, they cannot be
13 recalled and the President would have less than 10 minutes
14 to make this terrible decision.

15 If the President orders a launch and the attack is a
16 false alarm, he or she would have started nuclear war by
17 mistake. We should take ICBMs off alert and end the policy
18 of launch on warning.

19 In addition to extending decision time, the
20 administration can deter an intentional attack with a
21 smaller and more affordable nuclear force than currently
22 planned. Deterrence depends on a credible second-strike
23 capability, which is provided by our submarines at sea and
24 backed up by bombers. The United States does not need ICBMs
25 to deter nuclear war.

1 So, in our view, we can safely cancel the ground-based
2 strategic deterrent and save much of the \$264 billion
3 lifetime cost. At a minimum, this program should be delayed
4 while the administration explores new arms to control
5 negotiations with Russia, and I would just note the initial
6 progress made in Geneva today. In the meantime, the
7 existing Minuteman missiles can be refurbished at a fraction
8 of the cost of buying a new missile.

9 So, to conclude, by making these important policy
10 shifts, we can save hundreds of billions of dollars, reduce
11 the risk of nuclear war, and still protect the United States
12 and its allies.

13 Thank you, and I look forward to your questions.

14 Senator King: Thank you very much, Mr. Collina.

15 Next, we have Dr. Sharon K. Weiner, Associate Professor
16 at the School of International Service, American University.

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1 STATEMENT OF DR. SHARON K. WEINER, ASSOCIATE PROFESSOR
2 AT THE SCHOOL OF INTERNATIONAL SERVICE, AMERICAN UNIVERSITY

3 Ms. Weiner: Thank you very much. Thanks for the
4 invitation to come and speak to you today.

5 Senator King: Can you get a little closer to the
6 microphone.

7 Ms. Weiner: Yes, indeed.

8 Thanks for the invitation to come and speak today. In
9 my written statement, I acknowledge the organizations have
10 that funded my research, but I just want to --

11 Senator King: Would you like your written statement
12 submitted for the record?

13 Ms. Weiner: I would, please.

14 Senator King: Without objection.

15 [The statement of Ms. Weiner follows:]

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1 Ms. Weiner: Thank you.

2 I also want to make clear that the views I am
3 expressing today are my own, okay. So, in my written
4 statement, I make the argument that there are multiple ways
5 to maintain a safe, secure, and effective nuclear deterrent
6 and that requirements, and I am going to put those in air
7 quotes, are not a precondition that is necessary for
8 deterrence, but rather, they are one choice among many.

9 This afternoon, I would like to give you three examples
10 of current choices about nuclear modernization and frame
11 them not as so-called requirements, but as choices about
12 deterrence. The first I would like to look at is a deliver
13 system, GBSD. So, originally, the argument for GBSD was
14 that it was basically cost, that it was cheaper to build a
15 new system than to maintain Minuteman-III, but independent
16 analysis called that into question and then the argument
17 shifted.

18 Then it was Minuteman-III couldn't be sustained; it had
19 to be replaced. That has also been called into question by
20 independent analysis, as well as Air Force witnesses, and so
21 now increasingly, the argument for GBSD is that it is needed
22 to cover new threats that can't be covered by Minuteman-III,
23 thus, GBSD is a requirement for deterrence.

24 But let's consider, for example, that GBSD is required
25 for deterrence because it is needed to hold, at risk, a

1 particular set of targets. Hypothetically, let's pick a set
2 of targets in China. And so, from the perspective of
3 deterrence we have to ask a couple of questions about making
4 this choice. One is, to what extent does deterring China
5 depend on holding at risk this particular set of targets or
6 is China already deterred by the certainty that the U.S.
7 SSBN fleet has enough destructive capability to inflict
8 significant damage upon China.

9 The second question is, if our SSBN force can hold at
10 risk, say, 95 percent of the nuclear targets in China, is it
11 worth the estimated \$264 billion life-cycle cost of GBSD to
12 increase that to hold at risk, say, 97 percent of those
13 targets; in other words, is GBSD a requirement for
14 deterrence or is it nice to have because it buys down a
15 small amount of risk, or is it one option among many that we
16 have for deterring China.

17 Example number two, and this is warheads, specifically,
18 pit production. So, we are told that pit production soon,
19 and in fairly large quantity is necessary, that without it,
20 nuclear weapons may not function as, again, air quotes,
21 required.

22 Certainly, if nuclear weapons don't work, then we have
23 a problem with deterrence, but the current debate over pit
24 production isn't that the weapons don't work; it is how they
25 work. If we have 95 percent confidence that a nuclear

1 weapon will explode on target with 98 percent of its
2 anticipated yield, does that deter more or less, than a
3 weapon in which we have, say, 96 percent confidence.

4 Given that we have just over one and a half thousand
5 deployed warheads, plus twice that number in the hedge, how
6 many of these weapons have to work at what level to deter or
7 do we have enough redundant capability to at least call into
8 question, the need to spend \$18 billion or, likely, much
9 more on the, quote, required pit production capacity.

10 So, I offer these examples to illustrate that a safe,
11 secure, and effective nuclear deterrent can be achieved in
12 multiple ways, but also to point out one enduring legacy of
13 the U.S. nuclear force posture, which we know, and that is
14 the imbalance between what is actually required for
15 deterrence and the stockpile that we build and maintain. In
16 the early 1960s, Secretary of Defense McNamara, decided that
17 he would try to come up with a criteria for what it would
18 take to achieve the assured destruction of the Soviet Union.
19 So, he decided that that would be the ability to destroy 20
20 to 25 percent of the Soviet population and half their
21 industrial capability. At the time, that equated to about
22 400, one megaton warheads. The U.S. at that time, had
23 almost 18,000 megatons of warheads, okay. That was the
24 1960s.

25 More recently, in 2012, the military concluded it could

1 meet all of its necessary requirements with about a thousand
2 deployed strategic warheads, a third less than we have now
3 under New START. Most recently, in April, in front of the
4 House, Admiral Richard said the triad is designed to meet
5 all presidential requirements, even if one leg is lost. So,
6 these examples suggest that there is room for significant
7 reductions without compromising deterrence.

8 Our choice about modernization need to consider each
9 component of the nuclear arsenal, not in isolation from each
10 other, but as part of a collective contribution to
11 deterrence. Too much modernization sends a signal about
12 deterrence, that we are willing to risk a costly arms race
13 and instability. That we are interested in more than just
14 nuclear deterrence of existential threats to the United
15 States, that we are interested in either nuclear superiority
16 or nuclear warfighting, and I would argue both of those are
17 significant costs to modernization. Thank you.

18 Senator King: Thank you very much for your testimony.

19 The next witness is the Honorable Madelyn Creedon,
20 Research Professor at George Washington University.

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1 STATEMENT OF HON. MADELYN R. CREEDON, NONRESIDENT
2 SENIOR FELLOW ON FOREIGN POLICY, CENTER FOR SECURITY,
3 STRATEGY, AND TECHNOLOGY, BROOKINGS INSTITUTE, RESEARCH
4 PROFESSOR, GEORGE WASHINGTON UNIVERSITY, ELLIOTT SCHOOL OF
5 INTERNATIONAL AFFAIRS

6 Ms. Creedon: Thank you very much for the opportunity
7 to appear before the Strategic Forces Subcommittee on the
8 most difficult, but important topic of nuclear deterrence.

9 At the outset, I just want to be clear that I appear
10 here today in my personal capacity and that my remarks and
11 views are my own.

12 This subcommittee and this committee, actually, has a
13 very difficult job. You must examine the variety of
14 changing geostrategic conditions while trying to predict the
15 future, hoping that the decisions made today will result in
16 U.S. strategic systems able to counter the evolving threats
17 that future decades present; in short, ensuring that the
18 U.S. develops and maintains a powerful deterrent and that
19 the nuclear aspect of the deterrent remains safe, secure,
20 reliable, and effective, and fit for purpose, whatever that
21 purpose may be over time, however the threat evolves.

22 In 2005, Thomas Schelling opened his Nobel Prize
23 lecture by saying, the most spectacular event of the past
24 half-century is the one that did not occur. We have enjoyed
25 60 years without nuclear weapons exploded in anger; what a

1 stunning achievement or, if not an achievement, what
2 stunning good fortune. Then adding, can we make it through
3 another half-dozen decades?

4 Since that lecture, we have made it through another
5 decade and a half, but the question remains valid: can we
6 continue to avoid nuclear use or a nuclear conflict?

7 Today, the U.S. is most likely the only state with
8 nuclear weapons that is not increasing the size of its
9 nuclear arsenal. Russia, China, India, Pakistan, and North
10 Korea, are all making qualitative and quantitative
11 improvements to their nuclear arsenals. Even our close
12 ally, the United Kingdom, has recently announced that it,
13 too, is making a very small increase the size of its arsenal
14 because of the changing geopolitical situation.

15 While Russia remains the pacing nuclear threat, China,
16 as Secretary Austin recently said, is the tracking threat
17 for the future and will require a whole-of-government
18 approach to counter.

19 How does the U.S. regain leadership to reduce the
20 number and role of nuclear weapons, prevent nuclear
21 proliferation, and avoid an arms race, all while maintaining
22 a credible nuclear deterrent to protect ourselves and our
23 allies in the face of these new challenges, and be prepared,
24 if deterrence fails, to respond.

25 In his 2009 Prague speech, President Obama set the U.S.

1 on a long-term path to seek the peace and security of a
2 world without nuclear weapons. The first step was to obtain
3 the New START Treaty, but after that, the world chose a
4 different path.

5 China is expanding its nuclear arsenal and is
6 developing a true Triad of bombers, submarines, and ICBMs,
7 many of which will be road-mobile and have regional and
8 intercontinental capability. This expansion, although
9 relatively early, is rapid and could at least triple the
10 size of China's arsenal, maybe more, and the accompanying
11 delivery vehicles. What is the incentive for China to
12 reverse course?

13 Russia, on the other hand, is much farther along in its
14 modernization efforts, deploying a wide variety of new
15 systems, in addition to modernizing its Triad; more
16 importantly, Russia has a well-functioning nuclear
17 infrastructure, capable of producing hundreds of additional
18 warheads and hot production lines for missiles.

19 Previously, U.S. efforts to lead by example, such as
20 declassifying the total number of warheads to provide
21 transparency were not reciprocated and are there now,
22 unilateral, or bi- or trilateral steps that could improve
23 transparency and confidence that might ultimately be
24 reciprocated and result in mutually beneficial reductions?
25 Are Russia and China interested in such discussions and is

1 the U.S. willing to put on the table those things such as
2 missile defense that must be included in any serious
3 stability or transparency conversations.

4 Maybe the results of today's summit will provide an
5 opening. In the meantime, the U.S. is behind. The NNSA has
6 completed a life-extension program for just one nuclear
7 warhead. The Air Force's long-range stand-off missile, the
8 AGM-181, just entered engineering and manufacturing
9 development, EMD, this year, and the Air Force awarded the
10 EMD contract for the ground-based strategic deterrent, the
11 new ICBM, at the end of last year.

12 These missiles, as well as the new strategic bomber,
13 and the Columbia-class submarine, both of which are in
14 development, won't begin to deploy until the early 2030s.
15 And while the NNSA has an exceptional science infrastructure
16 to underpin the warhead life extension and surveillance
17 programs, new scientific capabilities will be needed, such
18 as additional computational capability and the new enhanced
19 capability for subcritical experiments in Nevada.

20 And the weapons production complex, on the other hand,
21 needs attention. Although significant work has taken place
22 over the last 10 years, to say that it is in dire straits is
23 probably not an exaggeration.

24 In time, NNSA will also need new facilities to produce
25 materials, such as lithium, tritium, and eventually highly

1 enriched uranium. As GAO noted in its recent report, the
2 long-anticipated bow wave of nuclear modernization is here.

3 As the Biden administration said in its interim
4 national security guidance, the U.S. can maintain a credible
5 deterrent, sure our allies, and get back on the road to a
6 world without nuclear weapons, even in the face of
7 increasingly greater challenges and worsening geopolitical
8 circumstances. We need the small steps and the bold moves
9 to make this happen.

10 Thank you, and I look forward to your questions.

11 [The statement of Ms. Creedon follows:]

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1 Senator King: Thank you. Next, we have the Honorable
2 Lisa E. Gordon Hagerty, former administrator at National
3 Nuclear Security Administration.

4 And I apologize, I will have to go vote and Senator
5 Fischer will be in charge and I will be back momentarily.

6 Go ahead.

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1 STATEMENT OF HON. LISA E. GORDON HAGERTY, FORMER
2 ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

3 Ms. Gordon Hagerty: Thank you.

4 Chairman King, Ranking Member Fischer, thank you for
5 the invitation to testify before you today on the state of
6 the U.S. nuclear deterrent, the nuclear complex, which
7 supports it, and policies affecting it.

8 My perspective today is from that of a career
9 professional, having served more than 35 years in the U.S.
10 Government, both in national and nuclear security programs,
11 as well as for a period of time in the private sector.

12 My most recent position was as the fifth administrator
13 of the National Nuclear Security Administration. I was
14 honored to return to the Government to serve our great
15 nation once again and work with the dedicated men and women
16 and women of the nuclear security enterprise, Armed Forces,
17 the interagency and international partners.

18 I would like to submit a statement for the record.

19 Senator Fischer: [Presiding.] Without objection.

20 [The statement of Ms. Gordon Hagerty follows:]

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1 Ms. Gordon Hagerty: Thank you.

2 And today, I would like to make sure that the positions
3 that I take and the opinions are expressed are my own.

4 For 7-plus decades, the cornerstone of our great
5 nation's security has been grounded in our nuclear
6 deterrent. Throughout this period, our allies and partners
7 have chosen to rely on the strength and the commitment of
8 the United States to extend our defense on their behalf
9 against a myriad of potential threats. We have advanced,
10 however, to an era where near-peer nuclear competitors,
11 adversaries, and malign actors, pose new and asymmetric
12 threats against us.

13 In addition to the ever-present strategic nuclear
14 threat against which we have planned for many decades, it is
15 now commonplace to learn about high-profile, cyberattacks,
16 or ransomware incidents. While we should prepare for and
17 defend against these new challenges, I urge policymakers not
18 to lose sight of the bedrock of our security.

19 Now, more than ever, our near-peer competitors and
20 adversaries are monitoring our policy decisions and actions,
21 or in some cases, inactions, and either perceive or believe
22 that the United States is close to the breaking point in
23 modernizing our deterrent.

24 The United States can no longer afford the luxury of
25 time, nor should it delay its efforts and willingness to

1 preserve our strength. Russia's strategic forces are
2 currently undergoing comprehensive nuclear modernization and
3 are also pursuing novel nuclear weapons, not covered by New
4 START. China continues to increase the number,
5 capabilities, and protection of its nuclear force and its
6 lack of transparency in its programs raises questions
7 regarding its future intent. Both are investing significant
8 resources and delivery platforms, such as hypersonic live
9 vehicles.

10 These nuclear powers have made clear that their nuclear
11 weapons will be a vital component of their respective
12 security postures, which continue threatening the United
13 States' interests around the world for the foreseeable
14 future.

15 While the United States often speaks to the robustness
16 of our deterrent, which keeps the peace, we are at a
17 crossroads. At the end of the Cold War, U.S. leadership
18 took an important step to reduce the tension and distress
19 that marked relations with the Soviet Union by significantly
20 reducing its nuclear weapons stockpile, determining that
21 maintenance was its singular priority.

22 U.S. nuclear security laboratories developed life-
23 extension programs for systems in the stockpile, whose
24 designs were based on nominal 10-to-20-year service lives
25 and are now being extended to 50 years and beyond; a

1 testament to U.S. scientific and engineering communities.

2 However, I would contend to you that those decisions
3 failed to anticipate future challenges, as the U.S. finds
4 itself as the only nuclear weapon state that is neither
5 designing, nor building new nuclear weapons. This is yet
6 another reason that full funding of and support for the
7 nuclear security enterprise infrastructure is more important
8 than ever.

9 Modernization will support existing stockpile
10 maintenance and prepare for the design, development, and
11 fielding of future modern stockpile systems. Let me be
12 clear, I am not advocating for massive reconstruction of the
13 nuclear weapons complex, as it was 30 years ago, though we
14 should all agree that there must be some resilience built
15 into our enterprise.

16 And while this hearing is important to does the
17 desperately needed modernization, I would remind you that is
18 only a fraction of the NNSA budget. It also funds the
19 workforce, the world-class scientists, engineers,
20 technicians, and administrative support staff that support
21 critical military application, arms control and disarmament,
22 and other vitally important national security programs that
23 only they can execute.

24 Simply put, when budgets are decreased, the staff is
25 cut. At a time when the U.S. is focused, and rightfully so,

1 on educating and hiring STEM-qualified, best and brightest
2 into our national security sector, there is an obvious
3 disconnect when the focus is exclusively on bombs and
4 warheads, yet here we are, knowing that the NSC is nearing
5 the breaking point, the Obama administration embraced that
6 reality, supporting a comprehensive modernization program
7 and the Trump administration did, as well.

8 Recently, NNSA reported that the anticipated two-site,
9 plutonium pit production strategy will be delayed, unable to
10 meet Congress' direction and DOD mission requirements to
11 field the GBSD in 2030. This is another stark reminder that
12 over the past two decades, several previous administrations
13 refused to proceed with construction of a modern pit
14 manufacturing facility, replacing a critical production
15 capability that was shuttered more than 30 years ago at the
16 Rocky Flats Plant.

17 While complaints continue over the cost of the GBSD,
18 every business case has borne out that if the Minuteman-
19 III's life is extended, it will cost more than the GBSD.
20 The GBSD has been designed to be adaptable and responsive to
21 new technologies, incorporate common parts, and respond
22 quickly to emerging threats. Bottom line, GBSD will be more
23 reliable and easier to maintain.

24 I strongly urge you to continue providing your
25 unwavering support for these national security missions,

1 doing everything to ensure the success and pursuit of global
2 nuclear security. For the past 2-plus years, both sides of
3 aisle agreed with and committed to the modernization and I
4 am cautiously optimistic that leadership will continue to do
5 so.

6 Nuclear weapons are horrific means of warfare, yet they
7 have kept the peace and have prevented World War III with
8 robust policy and programs. I would urge you to focus on
9 the importance of our future national security, not for
10 today or tomorrow, but for what we must maintain to ensure
11 that our freedoms are secure in the decades to come.

12 Thank you, and I look forward to your questions.

13 Senator Fischer: Thank you very much.

14 Mr. Kroeing, Dr. Kroeing?

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1 STATEMENT OF DR. MATTHEW KROEING, PROFESSOR OF
2 GOVERNMENT AND FOREIGN SERVICE, GEORGETOWN UNIVERSITY,
3 DEPUTY DIRECTOR, SCOWCROFT CENTER FOR STRATEGY AND SECURITY,
4 ATLANTIC COUNCIL

5 Mr. Kroeing: Great.

6 Ranking Member Fischer, thank you for the opportunity
7 to appear today to discuss U.S. nuclear strategy. I would
8 like to request that my written statement be entered into
9 the record.

10 Senator Fischer: Without objection.

11 [The statement of Mr. Kroeing follows:]

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1 Mr. Kroeing: U.S. nuclear strategy is distinctive for
2 three reasons. First, unlike other countries, the United
3 States doesn't just use its nuclear weapons to defend
4 itself; it uses its nuclear weapons to protect the entire
5 free world. The United States extends nuclear deterrence to
6 over 30 formal treaty allies, some of the world's best
7 governed democracies. Combined, they make up, roughly, 60
8 percent of the global GDP.

9 So, these countries rely on U.S. nuclear weapons for
10 their security and it is also in the U.S. national interest
11 to maintain geopolitical stability and these important
12 regions and to prevent the spread of nuclear weapons as
13 these countries don't need to build their own nuclear
14 weapons, as they can rely on a U.S. nuclear deterrence.

15 So, the Biden administration has rightly made
16 strengthening alliances and strengthening the rules-based
17 international system a top priority of its foreign policy,
18 and in order to do that, we are going to need a robust,
19 modernized, and flexible nuclear force. U.S. nuclear
20 weapons are a central pillar of the U.S. alliance network
21 and the rules-based international system.

22 U.S. nuclear weapons are distinctive for a second
23 reason. The United States, unlike other countries,
24 practices so-called counterforce nuclear targeting. Other
25 countries, such as China, we believe, in the event of a

1 nuclear war, would use their nuclear weapons against U.S.
2 population centers, attempting to slaughter large numbers of
3 innocent civilians.

4 The United States, on the other hand, practices
5 counterforce targeting; only targeting legitimate military
6 targets. And we do that for two reasons. One is legal and
7 ethical. We want to abide by the law of armed conflict.

8 But the second reason is strategic. If an adversary
9 were to decide to launch a nuclear attack, U.S. counterforce
10 strategy could limit damage to the United States and its
11 allies, saving millions of U.S. and allied lives. That has
12 implications for U.S. force posture. A larger arsenal is
13 needed for a counterforce strategy.

14 The third thing that is distinctive about U.S. nuclear
15 strategy is we can afford it. Other countries like France
16 and China, considered superpower arsenals in the past and
17 decided that they just couldn't afford it. The United
18 States has been blessed with the largest, most innovative
19 economy since 1945 and has been able to field a robust
20 nuclear force at a small fraction of its Defense budget.

21 So, in short, the United States asks more of its
22 nuclear weapons than other countries, and so it makes sense
23 that we require a more robust force. As President Kennedy
24 put it in 1961, the United States needs a nuclear arsenal,
25 quote, second to none.

1 The nuclear threat environment is deteriorating as you
2 are heard in many hearings over the past several weeks.
3 Autocratic revisionist countries, Russia, China, North
4 Korea, are expanding and modernizing their arsenals. Russia
5 is building battlefield and exotic nuclear weapons that are
6 not constrained by New START, arguably giving Russia a
7 quantitative and qualitative advantages over the United
8 States. China is on pace to double, if not triple, or
9 quadruple its nuclear arsenal over the coming decade. This
10 means for the first time in U.S. history, it faces two
11 distinct adversaries with meaningful nuclear capabilities.
12 And then North Korea is on the verge of becoming only the
13 third U.S. adversary with the ability to threaten nuclear
14 war against the U.S. homeland.

15 So, the nuclear security environment is deteriorating.
16 So, to deal with this challenge, the United States does need
17 a robust, flexible, modernized force. It should continue
18 the bipartisan modernization plans, started by President
19 Obama, continued by President Trump. So, this means
20 modernizing all three legs of the Triad: ICBMs, submarines,
21 and bombers, the LRSO, NC3, and the underlying nuclear
22 complex.

23 Also, the United States should continue with the
24 supplemental capabilities called for in the 2018 Nuclear
25 Posture Review, the low-yield, submarine-launch ballistic

1 missile, and the low-yield, submarine-launch cruise missile.

2 Now, some are arguing that the United States should
3 delay or cut the plan modernization, but that would be a
4 mistake. It would weaken U.S. nuclear deterrence. It would
5 cause U.S. adversaries to question our resolve and it would
6 cause U.S. allies to doubt our commitment to their security.

7 Instead, I would recommend that Congress ask DOD to
8 study whether existing requirements or existing plans are
9 sufficient to meet deterrence requirements or whether
10 quantitative and qualitative enhancements may be necessary.
11 It is hard to imagine that the program of record that was
12 started in 2010 in a very different security environment, is
13 still sufficient in 2021, as Russia, China, and others build
14 up their nuclear capabilities.

15 So, in short, I think if the United States wanted to
16 have a more isolationist foreign policy, pullback from its
17 alliances, ignore international law, then it could afford to
18 make deep cuts to its nuclear arsenal.

19 But so long as the United States wants to continue to
20 play its international leadership role, support its allies,
21 and uphold the rules-based international system, then it
22 will continue to require a robust nuclear force.

23 Thank you, and I look forward to your questions.

24 Senator King: [Presiding.] Thank you, sir.

25 We will now have 5-minute rounds of questions and see

1 where the discussion takes us.

2 Let's just pick up where Mr. Kroeing left off. Mr.
3 Collina, wouldn't our failure to modernize, given the age of
4 the Minuteman or your view is we should abandon the ICBMs,
5 wouldn't that, in itself, send a negative deterrent signal,
6 if you will, to our adversaries?

7 Mr. Collina: Senator, thank you for the question.

8 Senator King: Turn your mike on, please. Thank you
9 very much.

10 Mr. Collina: Senator, thank you for the question.

11 You know, when you look at deterrence, the basis of
12 deterrence in my view is assured retaliation, that we must
13 be able to retaliate to any nuclear strike that may come.

14 The land-based ballistic missiles, the ICBMs simply
15 play no role in that. They are not an assured deterrent and
16 here is why. If there were notice of an incoming attack,
17 but that attack has not yet landed, that launch could turn
18 out to be a false alarm. So, launching our ICBMs before
19 that attack lands, we could be starting a nuclear war by
20 mistake.

21 I think everyone would agree that would be a nightmare
22 scenario that we would never want to be in, so we can't
23 launch those ICBMs first. But you can't launch them second
24 either, because if it is a real attack, then those ICBMs
25 have been destroyed in the ground, because they are

1 vulnerable. They are immobile in silos.

2 So, there really is no use case for the ICBMs, in my
3 opinion, but they are quite dangerous, because as long as
4 they are there, any President would be attempted, might even
5 be advised to launch those nuclear weapons in an alert
6 situation where there may be an incoming attack.

7 Senator King: Well, because we know they are all
8 targeted, the temptation is use it or lose it is --

9 Mr. Collina: That is exactly right.

10 And so, there is this built-in incentive once they are
11 there, as they are there now, to use them before the attack
12 arrives, but that raise the daunting prospect that we would
13 start nuclear war by mistake. And, again, I think we want
14 to agree or should all agree that that is not a scenario
15 that we want to be a part of.

16 Senator King: Well, one of the arguments that I --
17 really, what you suggest is just vulnerability of the
18 submarines. They are there.

19 My concern is we thought space wasn't normal, too,
20 several years ago and now it is not and what if in 5, 10, 15
21 years from now, our adversaries figure out ways to track our
22 submarines, then suddenly, they are not [inaudible] I worry
23 about the perpetual [inaudible].

24 Mr. Collina: Senator, I agree with you that we need to
25 worry about future threats to the submarine force. The

1 concerns about the subs becoming vulnerable as been a
2 concern for decades. It hasn't happened yet, in part,
3 because of the very capable research and development program
4 that the Navy has to stay ahead of threats to submarines.

5 We need to keep doing that. We need to keep investing
6 in RND for submarine survivability. At the same time, we
7 are deploying a new generation of more stealthy submarines.
8 So, on top of that, we have the bombers as a backup to that.
9 So, I would say that we have three forms of insurance to the
10 possible future vulnerability of submarines. Those three
11 forms are enough.

12 And as I said, the ICBMs don't really provide any
13 insurance because they are simply not usable in any of the
14 scenarios that you can imagine.

15 Senator King: Let me ask a question, if any of you
16 that want to jump on this. Why is China reluctant to the
17 point of refusal to enter into any kind of nuclear talks?
18 Apparently, they were invited. They didn't even want to
19 observe the New START discussions with Russia.

20 Mr. Kroeing, any ideas on that?

21 Mr. Kroeing: Yes, I would be happy to answer that. I
22 think part of it is a lack of history and experience with
23 arms control. You know, we think of arms control as a broad
24 category of policy instrument, but, essentially, it is
25 really been an instrument used between the United States and

1 Russia.

2 So, I think there is some chance that over time, the
3 Chinese could be brought into the arms-control fold,
4 although it will be difficult. I think a second reason is
5 Chinese strategic culture, the idea, I think in the West, we
6 often think that transparency means security, being open,
7 showing the Russians what we have, seeing what they have. I
8 think for the Chinese, they see things very differently,
9 that secrecy equals security, hiding capabilities.

10 And, you know, I am told that when some Chinese heard
11 about the way we do New START inspections, they were shocked
12 at this, that we allow Russians to come and look at our
13 capabilities and vice-versa.

14 So, I think it will be difficult, but I think if arms
15 control is to be meaningful in the 21st Century China will
16 have to be brought in. It is not the 1970s anymore with the
17 United States and Russia, and strategic forces is not the
18 only adversary or the only types of capabilities we would
19 like to control.

20 Senator King: Well, it may be as China reaches a more
21 mature level of their nuclear force, then, perhaps, they
22 will feel confident enough to enter into these discussions.
23 I certainly hope so.

24 Senator Fischer?

25 Senator Fischer: Thank you, Senator King.

1 Dr. Kroeing, opponents of ICBM force often describe it
2 as vulnerable; meanwhile, advocates point out that there is
3 only one nation, Russia, that has the means to destroy it,
4 and argue that it is contradictory to talk about something
5 that could require as many as 800 Russian nuclear warheads
6 to destroy as being vulnerable.

7 Can you describe the principal benefits of maintaining
8 the Triad, and in particular, retaining the ICBM leg.

9 Mr. Kroeing: Yes, I would make a couple of points.
10 First, there has been a bipartisan consensus since the 1960s
11 with the United States regarding the Triad and the ICBMs.
12 Even some national security officials who came in skeptical
13 about the ICBMs, like Secretary Mattis, said once they have
14 really looked at the problem, they realize that the United
15 States does need ICBMs for deterrence.

16 And so, if you look at the 2018 Nuclear Posture Review,
17 we set out four major goals of U.S. nuclear strategy:
18 deterrence, assurance, hedging against an uncertain future,
19 and achieving objectives if deterrence fails. And ICBMs, I
20 think, are necessary for advancing all four of those goals.
21 They strengthen deterrence. As you pointed out, it would be
22 very difficult to disarm the U.S. ICBM force. Only Russia
23 would have a hope of even trying that. It strengthens
24 assurance, and to Senator King's question to Mr. Collina, I
25 have talked to allies who said that they are watching U.S.

1 modernization plans closely and they would see a scaling
2 back of our program as contributing to their concerns about
3 America's willingness to meet its alliance commitments. It
4 helps us to hedge against an uncertain future. For some of
5 the reasons that Chairman King mentioned, we can't be
6 certain that we can rely on the survivability of the
7 submarines. And they also help us to limit damage if
8 deterrence fails by providing additional capabilities that
9 the adversary would have to target before they could kill
10 millions of Americans.

11 So, for all of those reasons, I think ICBMs are
12 critical. The last point I would make, it is interesting
13 that we have this debate in the United States, because if
14 you look at other nuclear powers, the Russians, the Chinese,
15 and the others, they see ICBMs as the mainstay of their
16 deterrent, the most important leg, where in the United
17 States, some think that they are expendable, but I do think
18 they are critical for deterrence.

19 Senator Fischer: I am very concerned about staying on
20 schedule for modernization of all of our platforms. So, as
21 we look at this with the Triad and the importance that we
22 place on each leg of that Triad, could you address bombers,
23 specifically, and the fact that they are not armed and ready
24 and what that does to the planning of different options that
25 could be presented to the President.

1 Mr. Kroeing: Yes, that is a good question.

2 We often talk about how we have a Triad, but when you
3 talk about capabilities that are actually ready and could be
4 used promptly, it is only the ICBMs and the SLBMs. The
5 bombers are not on a day-to-day alert.

6 And so I think all three legs bring unique
7 characteristics to U.S. nuclear deterrence and, again, for
8 decades, there has been a bipartisan consensus that all
9 three legs are necessary for U.S. nuclear strategy.

10 Senator Fischer: Could you also address, sometimes
11 ICBMs, it is referred to as being on a hair trigger. And we
12 heard Mr. Collina talk about a President being able to make
13 maybe an emotional decision, an irrational decision that
14 would viewed by many as being irrational. By law, that
15 can't happen.

16 Can you go through, step-by-step, how decisions are
17 reached and what the options are, then, and who they come
18 from when it is presented to the President.

19 Mr. Kroeing: Yeah, so when people say that ICBMs are
20 on a hair-trigger alert, I think that is misleading, and
21 when people talk about de-alerting ICBMs, really, what that
22 means is physically removing warheads from the missiles and
23 putting them somewhere else and to only be uploaded in a
24 crisis or a war. And so, I think that doesn't make sense.
25 It does make sense to keep the warhead mated.

1 This idea that the President would face a use-or-lose
2 situation, I think there is actually a logical contradiction
3 in those arguments because people say we should get rid of
4 ICBMs so the President doesn't have to face this terrible
5 "use it or lose it" decision, but if we can afford to get
6 rid of ICBMs, then the President could afford to wait out
7 the nuclear attack and that is an option available to the
8 President. He could wait to ride out a nuclear attack.

9 On the other hand, if these capabilities are so
10 important that the President might want to use them
11 immediately in a crisis, then that also means that we can't
12 afford to get rid of them. So, I think that these arguments
13 that we can get rid of them because they are destabilizing,
14 again, rests on a contradiction.

15 My view is that these are critical capabilities and,
16 therefore, we should keep them.

17 Senator Fischer: Thank you.

18 Senator King: Senator Rounds?

19 Senator Rounds: Thank you, Mr. Chairman.

20 And thanks to all of our panelists today for visiting
21 and taking time to come in and visit with us on this issue.

22 Ms. Gordon Hagerty, the National Nuclear Security
23 Administration's 2022 budget is 28, the submission is \$28
24 million less than the fiscal year 2021 request. From your
25 experience as the former administrator of the NNSA, do you

1 believe this year's request contains sufficient funding to
2 continue to bring the agency's infrastructure and
3 capabilities into the 21st Century, and can you describe the
4 consequences if the NNSA is denied full funding for
5 addressing its deferred maintenance backlog.

6 Ms. Gordon Hagerty: Senator Rounds, in my previous
7 capacity as administrator of the NNSA, we put together a
8 very comprehensive 5-year national security plan known as
9 the 5-year [inaudible]. And that started in 2021. That saw
10 some significant growth over 18 percent or so budget overall
11 and the Congress supported that budget, went forward with
12 that for fiscal year 2021.

13 Part of that decision-making process was putting
14 together what was called a zero-base budget. So, we relied
15 on the expertise of the labs, plans, and sites, and
16 headquarters experts to determine what the modernization
17 program should be, given that we can't fund everything up
18 front, but what were the internal priorities, what were the
19 priorities for defense programs for nuclear
20 nonproliferation, and for naval reactors.

21 Once that floor was supported, which was at the \$19.8
22 billion budget for fiscal year 2021, the plan activity was
23 to grow nominally 2.1 percent per year over year over year
24 for the foreseeable future, vying any catastrophic issues.
25 In fact, I will give you one. Last year, the NNSA,

1 throughout the summer during the pandemic, did not miss a
2 delivery schedule to the Air Force or to the Navy, and
3 worked through the pandemic. So, we asked at the time, as
4 administrator, asked our workforce to continue to operate
5 through the pandemic and they did so.

6 Now, we put certain priority or certain lesser
7 priorities aside in order to execute the mission, the
8 ongoing missions for the Air Force and Navy and made every
9 delivery on time. And so, I would say that we had to
10 reprioritize, and that is what they have done in the NNSA
11 for larger programs.

12 I am concerned that, in my opinion, I am concerned that
13 if it is not fully funded in all the different three areas
14 of the NNSA's budget, either the personnel will be affected,
15 as I mentioned in my opening statement, when budgets are
16 cut, people are cut, and second of all, the modernization
17 programs need to be supported fully. And I am not quite
18 sure that the budget that was submitted for fiscal year 2022
19 does that. I believe Defense programs was fully funded.
20 That is good, however, they took resources out of research
21 and development and other critical areas.

22 So, I am very concerned that they are not paying
23 attention to the priorities. And what happens, as what we
24 have seen in the past, is once something slips to the right,
25 if you will, everything slips, and it has impacts across the

1 entire enterprise. So, I am very concerned about that, yes.

2 Senator Rounds: Thank you.

3 Mr. Collina, I have to admit, your testimony to me was
4 eye-opening and it is going to make it tough to sleep at
5 night thinking that that might be a possibility as to what
6 you are suggesting, and not so much the threat of nuclear
7 war being accidental, but the thought that we would
8 actually, seriously consider not doing a Triad.

9 I know that you indicated that you participated and
10 authored a book in which you had analyzed, based on the
11 Russian threat to the United States. How did you, in your
12 book, address the issue of the China threat, which clearly
13 is the focus today in terms of what we see over the next 20
14 to 25 years?

15 Mr. Collina: Thank you, Senator.

16 I think we definitely need to be concerned looking at
17 China, where they are today and where they may go. But I
18 think we have to keep it in perspective. The United States
19 has over 10 times as many nuclear weapons as China does.

20 Yes, China may be increasing. They may or may not
21 double their arsenal over the next decade; we will have to
22 see.

23 Senator Rounds: May I just ask, where did you get the
24 impression that we had that many more than the Chinese did,
25 I am just curious.

1 Mr. Collina: It is just open-source information,
2 Senator.

3 Senator Rounds: Thank you.

4 Mr. Collina: They have, roughly, 4,000 nuclear
5 warheads --

6 Senator Rounds: Well, that is the reason why I asked.
7 I want to know whether or not where the information was.

8 I am just curious, Mr. Kroeing, would you agree with
9 the assessment that China is one that we should observe, but
10 following along the lines as Mr. Collina suggested, one to
11 be observed, but not necessarily the peer competitor that
12 many of us see, and I don't mean to put words into Mr.
13 Collina's mouth, but I think that is kind of, I think most
14 of us see them as being the peer competitor for us in the
15 next 10 to 25 years.

16 Mr. Kroeing: Yes, I do see China as the most
17 significant national security threat to the United States
18 and its allies, like the Trump administration did and like
19 the Biden administration does. And I am quite concerned
20 about the nuclear threat, as well, because Mr. Collina is
21 referencing the entire size of the U.S. nuclear arsenal,
22 including stockpile and other things, but if you look at
23 deployed, strategic nuclear weapons, the United States has
24 1,550. The Russians also have 1,550. China, if it doubles,
25 triples, or quadruples, then it becomes not quite a peer to

1 the United States, but it is getting closer.

2 And I am also concerned about the non-strategic nuclear
3 advantages that Russia and China have in the theater.
4 Russia has a large stockpile of non-strategic nuclear
5 weapons. China has a large stockpile of intermediate,
6 short, and medium-range missiles that they could use to
7 deliver nuclear weapons against U.S. allies, bases, and
8 forces in the region. And the United States' non-strategic
9 nuclear capabilities are quite minimal.

10 So, I am worried about this buildup and I think the
11 United States needs to think hard about deterrence with
12 both, Russia and China together, which I think is a distinct
13 challenge that we haven't fully faced before.

14 Senator Rounds: Thank you.

15 And Mr. Chairman, thank you. I just would point out
16 that I think perhaps one of the most challenging things for
17 us in this committee and perhaps as a Congress, is to be
18 able to share appropriately how quickly China is making
19 changes to their nuclear capabilities, and I suspect that is
20 going to be one of the biggest changes we are going to have
21 is how do you get that information out, because a lot of
22 people are making assumptions based on information that may
23 not be accurate.

24 Senator King: And we will continue to does this topic
25 as we move along.

1 Senator Rosen, via Webex, please? There she is.

2 Senator Rosen: And our witnesses, of course, for being
3 here to testify, as well.

4 And Ms. Gordon Hagerty, it is so good to see you again.
5 It was a pleasure touring the Nevada National Security Site,
6 I guess it was 2019, so not so long ago.

7 But the nuclear command and control and communications,
8 or NC3 systems of the United States, are connected, of
9 course, through a network of communications, data processing
10 systems, and that potentially leaves us vulnerable to
11 cyberattacks.

12 So, DOE's Inspector General's audit concluded in April
13 that cybersecurity weaknesses persist throughout the
14 Department's unclassified networks, including those of the
15 NNSA or the Nevada National Security Site.

16 And so, Ms. Creedon and Ms. Gorton Hagerty, given that
17 NNSA's networks were compromised by the SolarWinds attack in
18 December, how concerned are you that strategic rivals of the
19 United States may try to infiltrate and harm U.S. nuclear
20 infrastructure and how can we make our systems there more
21 resilient against cyber threats, whether it is proactive
22 detection, analysis, mitigation of threats, incidents, and
23 the like.

24 So, Ms. Creedon, you can go first, please.

25 Ms. Creedon: Thank you, Senator.

1 It is certainly confusing and troubling to look at the
2 wide variety of capabilities that Russia and others have
3 when it comes to cyber capabilities or at large, not just
4 the SolarWinds, but also the Russian criminal adventures
5 with Colonial Pipeline and also with the meat-packing
6 facility.

7 The good news is that the classified networks of NNSA
8 remained secure and it was the unclassified networks that
9 were apparently penetrated, based on public reports.

10 The problem, though, as you mentioned going forward, is
11 as we modernize our nuclear command and control systems
12 across the board, not only at NNSA, but also at DOD, we have
13 to be extraordinarily careful that we look at all the
14 potential avenues for compromise, if you will, and that as
15 we design these things, they have to be as flexible and they
16 have to be as capable as possible, and they also have to be
17 extraordinarily redundant.

18 So, those are the things that I would look for as you
19 examine where the NC3 system goes in the future; ironically,
20 a lot of the current NC3 system is so old that by the virtue
21 of the fact that it is really old, although it is not
22 terribly vulnerable to cyberattacks, but the flipside is
23 that it is also very hard to maintain.

24 So, just keep in mind that we have to have these new
25 capabilities and they have to be as good as we can make

1 them.

2 Senator Rosen: No, I understand about IT
3 modernization.

4 Ms. Gordon Hagerty, do you want to speak to this?

5 Ms. Gordon Hagerty: Yeah, it is very nice to see you,
6 too, Senator. Thank you.

7 I would agree with everything that Ms. Creedon said.
8 We are constantly being attacked and penetrated by
9 adversaries, whether they are internal crime syndicates or
10 whether they are adversaries, China, Russia, and others,
11 appearance and those attacks take place on a daily basis.

12 We need to be highly flexible. We need to put together
13 a 21st Century and beyond cybersecurity capability. And I
14 know Chairman King talked about it a couple of weeks ago,
15 and it is disconcerting that we have systems that are
16 somewhat antiquated, but we are moving as quickly as we
17 possibly can, I believe.

18 We have to be ever-vigilant and have flexibility in
19 terms of putting together a highly effective cybersecurity
20 program, whether it is an NC3 or whether it is against
21 classified systems. Great progress has been made over the
22 last couple of years, but we need to be flexible in order to
23 deal with incoming threats on a regular basis. Thank you.

24 Senator Rosen: Well, thank you.

25 And I want to stay with you, Ms. Gordon Hagerty,

1 because as the last NNSA administrator, you were responsible
2 for ensuring the U.S. nuclear weapons stockpile remained
3 safe, security, and reliable, without the use of underground
4 nuclear weapons testing. I know we had a chance to talk
5 about this a lot.

6 Part of that mission included, of course, conducting
7 those subcritical and physics experiments at the Nevada
8 National Security Site, combined with advances in nuclear
9 modeling and these, of course, reduced the need for
10 explosive testing, while ensuring the effectiveness of our
11 nuclear stockpile.

12 So, can you speak to the importance of the Nevada
13 National Security Site to the stewardship of our nuclear
14 stockpile and the importance of upgrading the U1-A complex
15 at the site?

16 Ms. Gordon Hagerty: Yes, I certainly will.

17 In my capacity as administrator, I had an opportunity
18 to work very closely with all eight labs, plants, and sites,
19 especially with the Nevada national security organization,
20 which I still fondly call the Nevada test site.

21 Senator Rosen: Me, too.

22 Ms. Gordon Hagerty: For those of us who have been in
23 the community for a long time, it is incredibly imperative
24 to be able to retain the capabilities at not only U1-A, but
25 throughout the entire Nevada National Security Site. It is

1 a single location throughout the United States where we can
2 conduct unique testing, underground testing using
3 subcritical experiments. It is where the NNSS a putting its
4 enhanced subcritical capabilities for future testing and
5 capabilities to ensure that our stockpile remains safe,
6 security, and effective, in the absence of returning to
7 underground explosive testing.

8 So, it is incredibly important that U1-A continue to be
9 fully funded. The research and development programs that
10 are being put in place, the ECSA and ECSE, and others at U1-
11 A, should be completely supported.

12 In addition to that, many other programs are being
13 supported at the NNSA, including counterterrorism programs,
14 nonproliferation programs, arms control, and other
15 incredibly important national security missions that need to
16 have a location at which to conduct those activities and the
17 NNSS is the perfect location at which to do that.

18 So, it is a vitally important element of the National
19 Nuclear Security Administration and our entire national
20 security complex throughout the United States Government.

21 Senator Rosen: Well, thank you. I appreciate that and
22 all the work that you did with us in Nevada and I look
23 forward to trying to be sure that we do our part to keep our
24 nuclear stockpile safe. Thank you.

25 Senator King: Thank you, Senator.

1 Now, via Webex, Senator Warren.

2 Senator Warren: Thank you, Mr. Chairman.

3 And thank you for calling this hearing with a panel of
4 witnesses that truly reflects the diversity of thought that
5 exists within the community of nuclear policy experts. It
6 is critical that our subcommittee hears this full range of
7 views.

8 Just a few weeks ago, President Biden released his
9 presidential budget request, which included more than \$42
10 billion to modernize the United States' nuclear arsenal.
11 The Congressional Budget Office estimates that these
12 modernization efforts will cost taxpayers nearly \$1.7
13 trillion over the next 30 years. That is a staggering
14 amount of money.

15 But experts, and even former Defense secretaries have
16 cast doubt on whether these investments will actually deter
17 our adversaries and make us safer.

18 So, Dr. Weiner, you are an expert on deterrence and its
19 intersection with nuclear modernization. Let me just ask
20 you, will these levels of spending on very expensive nuclear
21 weapons result in a significant improvement in the United
22 States' strategic deterrence?

23 Ms. Weiner: So, thank you, Senator, very much for that
24 question.

25 So, let me respond with what the U.S. military has said

1 about this. As I mentioned in my testimony in 2012, they
2 concluded that the U.S. can meet all of its deterrence
3 requirements with one-third fewer nuclear weapons. So, this
4 would suggest that deterrence will not necessarily be
5 improved with a modernization program.

6 I mean, no one should doubt that the U.S. arsenal has
7 enough to achieve assured destruction of both, Russia and
8 China, our two supposed main competitors. And any attempt
9 to really improve upon this capability assumes that we can
10 somehow micromanage deterrence, that we can tailor it for
11 individual adversaries and situations, and that we can
12 somehow magically predict when our deterrent will be
13 challenged with what and how, but we can't. We can't
14 predict the future of those things. We don't know who is
15 going to challenge us how, when, and where, and the enemy
16 always gets a vote.

17 So, the more nuanced our deterrent becomes, the higher
18 the consequences if we are wrong about predicting that
19 future. I think it is safer to actually assume the
20 deterrence is robust is assured destruction, the assured
21 destruction, which we currently have, and that modernization
22 comes with additional costs; costs of instability, arms
23 races, and the dangerous notion that somehow nuclear weapons
24 are useful for more than deterring existential threats to
25 the United States.

1 So, I would actually argue that modernization might
2 make deterrence worse and less robust than it currently is.

3 Senator Warren: That is a very interesting perspective
4 on this. You know, I keep thinking about this, and I think
5 about it in connection with the kind of commitment we are
6 making on dollars. You know, the number I was citing
7 earlier, it is just a baseline number, and we see the cost
8 of nuclear weapons programs over and over, balloon from
9 their initial estimates with little or no accountability
10 from Congress. The Government Accountability Office report
11 concluded that NNSA's, quote, nuclear security budget
12 materials do not align with the agency's modernization
13 plans, end quote.

14 In other words, NNSA's modernization schedule is just
15 unrealistic and likely to cause more than anticipated, and
16 now you are injecting into this, it not only may not make us
17 safer, it may actually be more destabilizing.

18 So, let me stick on the spending end of this a bit, but
19 let me ask you, Dr. Weiner, do you believe that it is
20 reasonable to expect that the United States will end up
21 spending significantly more on nuclear modernization than
22 what has already been estimated?

23 Ms. Weiner: I think it would be unrealistic to assume
24 that we have seen the top price tag for this, and for some
25 very good reasons. First of all, we don't modernize our

1 nuclear weapons every day and it is not like we can call,
2 pick the box store of your choice and say, oh, I would like
3 to please have a solid rocket motor for my new GBSD. I
4 mean, these are unique systems. It is hard to anticipate
5 the cost of something that we haven't made in a very long
6 time.

7 But one thing we can anticipate is that we have a bad
8 track record of bringing in projects on schedule and under
9 budget or on budget. And so, one of the things I did in
10 preparation for this hearing was to pick one program and
11 say, if I use the history of that agency's management of
12 major projects, in this case, it is NNSA, if I pick one
13 program, which we are told is vital for nuclear
14 modernization and I inflate the cost of that program,
15 according to the past history of that agency's major
16 projects, what do I get?

17 And so, the program I picked was pit production. So,
18 originally, pit production was estimated to cost between 3
19 and just under \$8 billion. The current estimates, which I
20 think came out just quite recently, are between 11 and \$18
21 billion. So, already a lot of going up there.

22 But I looked back at some of the other major programs
23 on par with this sort of thing that NNSA has to do. So,
24 UPF, the uranium processing facility, if pit production goes
25 up as much as UPF did, and keep in mind, UPF, eventually, I

1 think it was Congress said you have to stop spending more
2 money on this, but if pit production goes up as much as UPF,
3 instead of spending 11 to 18 billion, we will be spending
4 potentially \$49 billion on pit production, the current
5 plans.

6 If we use CMRR as our lodestone, the chemistry and
7 metallurgy research and replacement facility, then we are
8 talking about spending, in terms of costing inflation, about
9 \$53 billion on pit production, not 11 to 18.

10 Or if you want to pick the poster child for things that
11 cost more than we thought they would, that would be MOX,
12 and, again, the very building where we are going to put in a
13 pit production facility at the Savannah River site, yes.
14 So, we never finished MOX, but it went up from 1.4 billion
15 to \$28 billion. To my knowledge, there has never been, I
16 don't think Congress has ever even done an investigation of
17 what went wrong with the MOX project and why it went up that
18 much.

19 Yeah, we are going to use the same facility for our pit
20 production facility. So, if pit production goes up as much
21 as MOX did, instead of 11 to 18 billion, we could be
22 spending 66 to \$150 billion on pit production.

23 Senator Warren: Wow. Thank you very much. I see that
24 I am way over my time, so I will stop now.

25 I have other questions that I will submit about the

1 wisdom of giving just one person the sole authority to
2 launch nuclear weapons.

3 But thank you for your indulgence, Mr. Chairman. I
4 appreciate it and I appreciate your having this hearing, and
5 I appreciate our witnesses being here.

6 Senator King: Thank you, Senator.

7 Senator Kelly?

8 Senator Kelly: Thank you, Mr. Chairman.

9 I want to, first of all, thank all of the witnesses to
10 being here today. It is great to see all of you.

11 So, Secretary Austin has stated that nuclear deterrence
12 is the Department of Defense's highest priority and that the
13 nuclear Triad is the bedrock of our national defense. In
14 years past, the United States and Russia engaged in a high-
15 stakes nuclear arms race and today, new nations, such as
16 China and North Korea, have rapidly advancing nuclear
17 capabilities and Iran is heading in that direction.

18 So, Ms. Creedon, I want to get your thoughts on
19 countering the threat from Iran. A nuclear Iran is a threat
20 to Israel and to regional security, including U.S.
21 interests. We can't accept it, yet in recent years, Iran
22 has made advancements in their nuclear program.

23 Ms. Creedon, what are the best options available to
24 stop Iran from getting a nuclear weapon and how do we
25 enhance regional and U.S. security?

1 Ms. Creedon: Thank you, Senator.

2 The JCPOA, which was negotiated during the Obama
3 administration, although it was not enduring for the long-
4 term, what it did was it attacked the most problematic
5 aspect of what was then the Iranian program and that was the
6 enrichment of uranium. The decision was made during that
7 JCPOA that these most dangerous things would be gone after
8 first and then in time, as relationship improved, there was
9 the possibility for further actions.

10 I personally believe that withdrawal from the JCPOA was
11 a significant mistake. It set us back in terms of the
12 capabilities of Iran. They have slowly reversed various
13 aspects of that JCPOA, and so I hope that this
14 administration, as it has begun to have new discussions with
15 Iran and trying to do something that looks like getting back
16 into the JCPOA, whatever that means at this point in time,
17 is successful. The only way we are going to make sure that
18 Iran doesn't develop nuclear weapons is through these
19 diplomatic processes.

20 Senator Kelly: You know, my understanding, I think it
21 has been reported that the Iranians have begun some time ago
22 now after the last administration got out of the JCPOA, that
23 they have begun flowing uranium gas into their centrifuges.
24 So, the progress they have made since the agreement has
25 ended, assuming we get to a new agreement, would you agree

1 that we have to figure out a way to get back to the
2 capability or pre-ending the JCPOA agreement, and then how
3 would we do that?

4 Ms. Creedon: So, absolutely, Senator.

5 And the mechanism for doing that was established in the
6 JCPOA and even though the U.S. pulled out, that mechanism is
7 still in place and that mechanism is having the
8 International Atomic Energy Agency do very intrusive
9 inspections of the various facilities in Iran.

10 So, interestingly, Iran had not pushed back on the IAEA
11 in terms of its inspection. Obviously, there are issues
12 associated with some of the inspections, but that regime,
13 which is the most intrusive regime that the IAEA has with
14 any country, needs to go forward and also to be
15 strengthened, if possible, in any future negotiations
16 amongst the various countries that are now re-engaging.

17 Senator Kelly: Thank you. And, Ms. Creedon, one more
18 question for you. In a 2018 interview with Australia's
19 Perth USAsia Centre, you mentioned three areas of concern
20 regarding nuclear weapons in the Indo-Pacific region. I
21 don't know if you recall this interview 3 years ago, but you
22 mentioned risk of theft for terrorist use as a risk,
23 accidental use, mistaken use.

24 How do we work with other nuclear nations to ensure
25 that none of those concerns that you raised come to pass,

1 not only with our allies, but do we also do that with our
2 adversaries?

3 Ms. Creedon: Thank you, Senator.

4 We had a very large and extensive program with Russia.
5 There is a, it was larger, now smaller, effort with China to
6 really focus on materials, because the materials are what
7 are the hardest to get and, yet, the key element of some
8 terrorist or anybody else getting nuclear weapons or nuclear
9 explosive devices. So, focusing on these materials, making
10 sure that the materials are secure, that there aren't excess
11 materials roaming around, if you will, understanding how
12 adversaries are manufacturing these materials, particularly
13 North Korea, what are they doing, are they materials-
14 secured; these are all things that we really have to focus
15 on.

16 One of my historic worries has been, we have talked a
17 lot about counterterrorism and nuclear terrorism and not
18 when, but -- or not if, but when this might happen, and it
19 hasn't happened. So, that is good fortune. It is the
20 result of a lot of good work.

21 But now I sometimes worry that this concern has maybe
22 dropped off the radar screen. I think that is a mistake if
23 we don't continue to support and fund these counter-
24 proliferation, proliferation prevention, and counter -- the
25 interdiction programs, all of these programs that are geared

1 to making sure that the materials are secure and not falling
2 into the hands of those that we don't want them to fall
3 into. Thanks.

4 Senator Kelly: Thank you.

5 Senator King: Dr. Kroeing, you sat very patiently and
6 listened to some arguments about why we shouldn't, didn't
7 have to modernize, it would be too expensive.

8 Would you like to respond to those comments?

9 Mr. Kroeing: Yes, thank you for the opportunity,
10 Senator.

11 The numbers for U.S. nuclear modernization are, indeed,
12 large, but I think spending comes down to priorities and
13 what are our priorities. And the U.S. Department of Defense
14 has said that the nuclear deterrence is the most important
15 mission of the U.S. Department of Defense.

16 And if you put those numbers in the context of the
17 overall Defense budget, they are modest, in my view. Five
18 percent of the U.S. Defense budget is what has been
19 estimated for U.S. nuclear modernization.

20 And so, reasonable people can disagree, but I think
21 that is a value --

22 Senator King: Isn't one of the problems that we are
23 modernizing all three legs of the Triad at the same time?

24 I liken it to a budgetary pig in the python of the
25 budget. We have the submarines, the new bomber, and the

1 modernization of the missiles, all coming within about a 5-
2 to-10-year period, which is going to eventually tail off
3 after those capital investments are made.

4 Isn't that, from a budgetary, point of view, isn't that
5 so?

6 Mr. Kroeing: Yes, we face the spa wave of nuclear
7 modernization, that is right. And so, I think it would have
8 been better if we had started some of these programs in the
9 past, but now we are nearing a place where these platforms
10 are really nearing the end of their service life, and as
11 others have testified, I think it would be dangerous to
12 extend the service lives of these capabilities further.
13 There are only so many times a submarine can go down and
14 come back up without endangering the lives of the sailors.

15 Senator King: Let me pursue with you one of the
16 questions that I think Mr. Collina raised that I think at
17 least bears discussion, and that is the sole authority
18 issue.

19 Richard Nixon was notoriously unstable toward the end
20 of his period in the White House, heavy drinking, and then
21 there was even a time when I think Secretary Schlesinger
22 said, don't do anything that the President tells you without
23 checking with me.

24 We are talking about civilization. We are not talking
25 about a strategic strike on an arms depot. We are talking

1 about the fate of civilization.

2 And it is unlikely, as I have seen the various
3 scenarios, that it is a bolt from the blue, where it has to
4 be a momentary decision. Why not a system that says the
5 President, the Secretary, the Chief Justice of the Supreme
6 Court, and Speaker of the House, or some, you know, I just
7 made that up, but some group of people to make this
8 tremendous decision.

9 Because in many cases, as I say, it is not a matter of
10 minutes; it could be hours or days. And so, the entire fate
11 of the civilization is not resting in one person's hands,
12 whoever it is, the President of the United States is a human
13 like the rest of us. Give me some thoughts.

14 Mr. Kroeing: The first thing I would say is I think it
15 is not quite accurate to say that the President has the sole
16 authority. There would be other people involved. The order
17 would have to go through at least one other military officer
18 and then it would have to go down to the launch officer.

19 Senator King: But the only stoppage, I have been
20 through this, the only backstop is illegal order. But I am
21 old enough to remember the Saturday Night Massacre, where
22 President Nixon went through three layers until he got
23 somebody who would carry out his order. He fired three
24 people until he got to Robert Bork.

25 So, that doesn't satisfy me because I am sure that any

1 President could eventually get to some colonel who would
2 say, yes, sir, Mr. President.

3 Mr. Kroeing: So, the second thing I would say is I
4 think there are scenarios where prompt use of U.S. nuclear
5 weapons would be important and could save many lives. So,
6 for example, if North Korea used a nuclear weapon against
7 Seoul and was getting ready to use a second or a third, I
8 don't think we would want to have a committee meeting to
9 decide whether we should use U.S. capabilities, possibly
10 nuclear weapons, to stop that attack from taking place.

11 So, I do think that promptness can be important for
12 saving U.S. and allied lives in certain plausible scenarios.

13 Senator King: And not to put words in your mouth, but
14 on this issue of cost, it also has to be weighed against the
15 cost of being wrong, isn't that correct, which would be
16 immeasurable.

17 Mr. Kroeing: That is right. Possibly World War III,
18 nuclear war. And so, I think 5 percent of the Defense
19 budget is a good value.

20 Obama's Secretary of Defense, Ash Carter, said nuclear
21 weapons don't actually cost that much. Secretary Mattis,
22 Trump's Secretary of Defense, said we can't afford national
23 survival. So, it is a large number, but I think it is a
24 good investment.

25 Senator King: Senator Kelly, do you have further

1 questions?

2 Senator Kelly: Well, just to follow-up on the
3 Chairman's questions.

4 Don't we often think about this in terms of the first-
5 strike capability compared to a response, if we detect a
6 launch and we can verify that that is an incoming strike
7 from one of our adversaries, that the decision tree could
8 be, is there a scenario where you see that the decision
9 matrix and the number of individuals involved is different
10 in one case compared to the other?

11 Mr. Kroeing: So, just to make sure I understand,
12 Senator, so, there may be some scenarios in which we would
13 have a committee make a decision on nuclear use and others
14 where we would want to have the President to have sole
15 authority.

16 Senator Kelly: Yeah, I am not necessarily, I don't
17 think we should get into the committee scenario, but maybe
18 different options to maybe interrupt a decision based on
19 what the scenario is.

20 Have you thought through that process?

21 Mr. Kroeing: Well, to be honest, it is not an issue
22 that I have given a lot of attention to. My initial thought
23 is that that could weaken a deterrence. The United States
24 has never had a no-first-use policy.

25 Senator Kelly: Uh-huh.

1 Mr. Kroeing: We want our adversaries, especially the
2 Russians, the Chinese, the North Koreans, if they are
3 thinking about aggression against us or our allies, even
4 non-nuclear aggression, to have the possibility that U.S.
5 nuclear weapons could be used in the back of their mind, and
6 so I think steps we take to complicate that process could
7 give them more reassurance that they do not have to worry
8 about U.S. nuclear weapons, that the process is too
9 cumbersome, that it would be unlikely that they would be
10 used. But it is an issue that I should give more thought to
11 because I see that it is of interest to the committee.

12 Senator Kelly: Well, thank you.

13 Thank you, Mr. Chairman.

14 Senator King: -- you use something similar. The
15 argument that I have heard to counter that, us undertaking a
16 no-first-use or declaring a no-first-use policy is that it
17 would undermine the confidence of our allies. Japan has
18 been mentioned to the point where they may say, well, we
19 can't really count on the American umbrella, therefore, we
20 will develop our own nuclear capability, or South Korea, or
21 another ally.

22 What is a response to that argument?

23 Mr. Collina: Thank you, Senator.

24 Well, first, let me say that I think a no-first-use
25 policy would be very much in the U.S. national security

1 interest because there is no realistic scenario where the
2 U.S. would want to start a nuclear war. I mean, think about
3 it, why would we want to start a nuclear war, which is what
4 first-use is.

5 No President has used nuclear weapons in 75 years,
6 because they have seen no need to and simply don't want to
7 do that. So, I think we have a de facto no-first-use policy
8 today, it is just we are not getting the benefits for it.

9 And in terms of the allies, I fully understand that the
10 allies who depend upon U.S. extended deterrence will be made
11 nervous by a U.S. no-first-use policy, but I think we can
12 address their concerns by reassuring them, because extended
13 deterrence does not depend on first-use. Extended
14 deterrence depends on assured retaliation.

15 What we are saying is, if you, our allies are attacked,
16 we will be there for you. That is a retaliation promise; it
17 is not a first-use promise. So, I think we need to sit
18 down, and I fully understood that this requires a heavy-lift
19 diplomatic effort, and a lot of damage was done in the Trump
20 administration on the alliances, so I completely get that.

21 But the Biden administration needs to sit down, and in
22 the Biden administration, it is being conceived as a sole-
23 purpose question. That is the term that is being used
24 there. But the Biden --

25 Senator King: Let me follow-up on that for a minute.

1 Mr. Collina: Yeah.

2 Senator King: Doesn't that, then, let North Korea off
3 at hook, with regard to chemical and biological weapons?

4 Deterrence is in the mind of the adversary. Don't we
5 want them nervous about, gee, if we use chemical weapons in
6 a massive way, we could face a nuclear strike? You want to
7 put your adversary in a quandary.

8 Mr. Collina: Senator, I think that is a great
9 question.

10 I would say that we only want to make threats if they
11 are credible. If the United States makes threats that are
12 not credible, that undermines all our other threats that we
13 make.

14 I do not perceive it as credible that the United States
15 would start nuclear war with North Korea over a chemical or
16 a biological weapons issue, because that opens us up to
17 nuclear retaliation from North Korea, particularly, when we
18 have conventional weapons that can handle that threat.

19 So, I would only want the United States to make threats
20 that are credible, and to me, the first-use of nuclear
21 weapons, something that we haven't done in 75 years and that
22 would open us up to nuclear retaliation is a bad idea and is
23 simply not a credible threat.

24 Senator King: Thank you.

25 Senator Sullivan, welcome.

1 Senator Sullivan: Thank you, Mr. Chairman.

2 And I want to compliment the chair on your active
3 tenure and aggressive posture on all these hearings. I
4 think they are great. I really do. So, thank you. It is
5 really, really informative for everybody, including myself.

6 Senator King: I think this is one of the toughest
7 challenges, intellectual and --

8 Senator Sullivan: All of these are tough.

9 Senator King: Yeah.

10 Senator Sullivan: So, I am going to ask you guys a
11 tougher one, no, not a tougher one; a tough one, as well.

12 Dr. Kroeing, I will start with you, but maybe the
13 others can jump in. So, we had a hearing in this
14 subcommittee last week on missile defense and as you know,
15 our ground-based missile interceptor program is primarily
16 designed for a ROGUE nation, North Korea, Iran, and, you
17 know, there have been some arguments about, oh, maybe we get
18 rid of that, too.

19 I think that is a really bad idea, because then you
20 assume that Kim Jong-un and the Ayatollah are irrational
21 actors, which, I think there is a lot of debate about that,
22 whether they want to go down in a flame of glory and fire
23 off weapons.

24 But there was a broader issue that General VanHerck
25 mentioned at the end of the hearing. We just started to

1 unpack it. It is really how does missile defense contribute
2 to flexibility in our strategic deterrence?

3 And I don't think enough people think about that, but
4 it is this idea that if you don't have any kind of missile
5 defense, so let's say North Korea launches a nuke and all of
6 a sudden we don't have missile defense and it is coming our
7 way and we are like, oh, geez, now what do we do? I guess
8 we have to retaliate.

9 So, now we fire one off towards Pyongyang and the
10 Russians and the Chinese are like, what the hell is this
11 coming? And all of a sudden, you have World War III because
12 you had no strategic flexibility.

13 If North Korea launches a nuke towards us, we shoot it
14 down. We say we are really mad. Maybe we retaliate, maybe
15 we don't.

16 So, can you talk a little bit more about that strategic
17 deterrence and flexibility that our missile defense system,
18 although, only focused on ROGUE nations, admittedly,
19 provides much more strategic deterrence at the great power
20 level that a lot of people miss that.

21 Mr. Kroeing: Thank you, Senator.

22 I think that is correct, that missile defense does
23 contribute to U.S. deterrence. Deterrence theorists
24 distinguish between deterrence by retaliation and deterrence
25 by denial, and missile defense is essentially a deterrence

1 by denial.

2 If North Korea thinks that it might be able to conduct
3 a limited nuclear attack against the United States or Russia
4 and China, the fact that we have missile defense complicates
5 that calculation for them. It takes cheap shots off the
6 table.

7 Senator Sullivan: And what about this idea of
8 flexibility in our own strategic deterrence; meaning, we
9 don't have to immediately go to a mad, kind of scenario with
10 them that could draw in other countries who have massive
11 arsenals.

12 Mr. Kroeing: That is an important point.

13 As well, if we didn't have missile defense and an
14 adversary conducted a nuclear attack against the United
15 States, I think it is almost certain that a U.S. President
16 would have to retaliate.

17 With missile defense, it does provide options, as you
18 point out. If we shot a missile down, I think it would
19 reduce the pressure the President felt to retaliate with
20 nuclear weapons. That is a good point.

21 Senator Sullivan: Thank you.

22 Let me ask Mr. Collina, I think I missed it, but I
23 think Senator Rounds said the idea of removal of the ICBMs
24 from the Triad keeps him up at night. It keeps me up at
25 night, too.

1 So, were you the one advocating for that, and give me
2 your best shot on it. You know, I am always trying to learn
3 here, but it is highly unlikely you are going to convince
4 me. I find the argument and notion almost irrationally
5 irresponsible but give it your best shot. I just want to
6 hear it.

7 I agree with Senator Rounds, that would keep me up at
8 night, as well, but you are an expert, so what is your
9 argument on that?

10 Mr. Collina: Well, Senator, I want to appreciate your
11 question and your openness to hearing arguments that you may
12 not be fully open to, but I really appreciate --

13 Senator Sullivan: I am not that open.

14 Mr. Collina: I appreciate it.

15 Senator Sullivan: Listen, I am kind of curious.

16 Mr. Collina: I appreciate the spirit in which you ask
17 it. And here is how I would answer your question.

18 You know, there are two ways that you would use an
19 ICBM, right; you would use it first or you would use it
20 second. And let's look at those in turn.

21 If you use an ICBM first, and presumably, you are doing
22 that because you think there is an attack coming at us,
23 right, that there is warning of attack, and you use the ICBM
24 first before that attack gets here, that could be a false
25 alarm. And if that is a false alarm and you used the ICBM

1 first, we have just started nuclear war. To me, that is the
2 ultimate nightmare. I think we can all agree that we want
3 to avoid that situation. So, using ICBMs first is simply a
4 bad idea.

5 Okay. So, you can use them second. Well, if that is a
6 real attack and those weapons land, the ICBMs are gone.
7 They are all in their holes, in their silos; they are
8 vulnerable. So, if it is a real attack, the attack lands,
9 presumably aimed at the ICBMs, because they are the main
10 targets to go after, we don't have them available for second
11 use.

12 So, you can't use them first. You can't use them
13 second. What are they for?

14 At the same time, because they are there, they create
15 this "use them or lose them" situation, where a President
16 would have to at least consider the option and may even be
17 advised to use them in a situation where there is a warning
18 of an attack coming in, and that increases the possibility
19 of us starting nuclear war by mistake.

20 So, from that perspective, you can't use them first.
21 You can't use them second. But it creates the danger of us
22 starting a nuclear war by mistake.

23 Senator King: And, in fact, we had some close calls in
24 that regard, did we not?

25 Mr. Collina: We have had close calls. And the person

1 who I wrote the book with, former Secretary of Defense Bill
2 Perry, lived through two false alarms when he was in the
3 Pentagon and there were two incidents in 1979 and 1980 where
4 there were reports that there were hundreds of ICBMs coming
5 in from Russia. In one case, the warning went all the way
6 up to the national security advisor, who was almost ready to
7 call the President of the United States, at that time,
8 President Carter, to say, Mr. President, there is a Russian
9 attack coming in, what should we do? And at the last
10 minute, it was determined that that was a false alarm.

11 So, we have had way more false alarms than we have had
12 real attacks. And I would just add the cybersecurity
13 element to all this. We are all aware that cyber threats
14 are increasing. They are also increasing to our nuclear
15 systems, to our command and control systems, to the point, I
16 would submit, that a President, when getting an alert that
17 there may be an attack coming in, has to assume that that
18 attack is false until proven otherwise, not just because of
19 the false alarms that we have had in the past, but because
20 cyberattacks make additional false alarms more likely.

21 And we can't address those threats through cyber
22 defenses. We can only address them through policy, and in
23 my opinion, the policy has to be, assume the attack is
24 false, until proven otherwise. That means you cannot launch
25 ICBMs first.

1 Senator King: Senator Kelly?

2 Senator Kelly: So I, like Senator Sullivan, I am
3 convinced, as well, but it sounds like, though, you could be
4 advocating possibly for a bigger investment in the United
5 States Navy.

6 I served in the Navy for 25 years and we don't have
7 that first-use, second-use issue with our nuclear submarine
8 deterrent.

9 Mr. Collina: That is quite right.

10 The submarines are a great example of a force that they
11 are invulnerable when deployed at sea. You don't have the
12 "use it or lose it" crisis in the way that we do in ICBMs.
13 If an attack is coming in, you can wait out the attack, as
14 horrible as that sounds, and see if it is a real attack.
15 And if you know it is a real attack, then you can retaliate.

16 You know, people think that if there is a warning of an
17 attack coming in, that we have to respond right away. In
18 fact, an immediate response of ours does not stop the attack
19 from coming in, right. If that is a real attack, it is
20 going to land either way.

21 So, better to wait it out, see if it is real. If it is
22 not real, your self-control has just saved the world. And
23 if it is real, you still have the subs out in the oceans
24 that can retaliate.

25 So, from my perspective, you know, it is a no-brainer.

1 You don't launch nuclear weapons on warning of attack.

2 Senator Sullivan: Who wants to rebut that argument?

3 Senator King: Go ahead, Dr. Kroeing.

4 Mr. Kroeing: Well, I disagree with my colleague. I
5 think that there are situations when the United States might
6 want to use ICBMs first and that it could also use ICBMs
7 second.

8 So, the scenario that was painted was, we get, our
9 sensors pick up evidence of an attack and then the President
10 is trying to decide whether to respond. But I think this
11 bolt out of the blue, Cold War scenario is unlikely, as many
12 people have said today.

13 Rather, I think the greatest risk of nuclear war is
14 major conflict, regionally, that escalates, and I think
15 there are scenarios where Russia invades NATO allies, China
16 invades or attacks allies in the region, maybe these use
17 other unconventional weapons, where the United States would
18 want to consider nuclear first-use. We do not have a no-
19 first-use policy.

20 In addition, I think the United States might want to
21 use nuclear weapons second and it could use ICBMs second.
22 It is a robust force, 450 ICBM silos. To destroy all of
23 those, Russia would have to use 900 nuclear weapons. There
24 is no guarantee that they would succeed, so I think that
25 ICBMs are survivable. It is not some easy target for an

1 adversary to take out. Only Russia could contemplate that.
2 China and North Korea couldn't even, doesn't even have the
3 capability to conduct that kind of attack.

4 And the idea that there is this "use it or lose it"
5 problem, I think rests on a false dilemma, you know, a
6 common, illogical fallacy. In the real world, there are a
7 lot of choices, other than use and lose. You can negotiate,
8 use conventional forces and other things.

9 So, I do think that, as I said earlier, that ICBMs are
10 an important part of the U.S. nuclear arsenal. There has
11 been a bipartisan consensus on that since the 1960s and they
12 advance all four of the major goals of the U.S. nuclear
13 policy outlined in the 2018 Nuclear Posture Review.

14 Senator King: Dr. Weiner, you had a thought?

15 Ms. Weiner: I just wanted to comment on the "use it or
16 lose it" dilemma and the notion that in the middle of a
17 crisis, a President would sit back and say, you know, there
18 are other options than the one that I am being presented
19 with. So, I have a research project that actually uses a
20 virtual reality experience to duplicate just exactly this
21 crisis, right. And so, you get to play the role of
22 President. People are giving you all the advice you want
23 and you have --

24 Senator King: That would really cause Sullivan to lose
25 sleep.

1 [Laughter.]

2 Ms. Weiner: Come participate.

3 So, you know, you get all the information you want.
4 You can ask anybody any question that you want. But the
5 fact of the matter is there is someone reminding you that
6 you have 15 minutes or less to make a choice; otherwise,
7 those ICBMs could be gone. They are a valuable military
8 asset, and so you have to consider that.

9 There is also someone reminding you that you probably
10 really want to leave the White House pretty quickly, because
11 we don't know what else is out there, so you may have to
12 leave.

13 There is also the fact that, based upon my research,
14 only one President of the United States ever actually
15 participated in these drills when they were asked to.
16 Everybody else sent a delegate, somebody else. And so, you
17 may have the President of the United States in this crisis,
18 the clock is ticking, trying to figure out what to do. Keep
19 in mind, there is a huge amount of uncertainty, right; you
20 don't have perfect intel at that point.

21 And so, the President is trying to make a decision
22 about what to do and they may never have practiced what it
23 is like to be involved in a nuclear crisis, adding the fact
24 that deterrence on the one hand assumes you are the rational
25 decision-maker. You can sit back, you can say, okay, this

1 is what uncertainty tells me. I am weighing the pros and
2 the cons. Here is the rational choice.

3 And then there is a huge literature from every foreign
4 policy crisis that we have examined from behavioral
5 economics or behavioral psychology, all of which agree, you
6 are not going to be rational. The disagreement is about
7 which particular irrational bias, which all people have in
8 terms of decision-making, the disagreement is about which
9 irrational bias is going to govern your behavior in that
10 crisis, not that you are going to be rational.

11 Senator King: I find it shocking that only one
12 President in the nuclear age has physically participated in
13 one of these exercises.

14 I participated in one in the [inaudible] 4 or 5 years
15 ago and it was a stunning experience and I just, I think you
16 would want some experience in what that situation would be
17 like. So, I do find that shocking.

18 I want to thank all of you. This has been a very
19 stimulating discussion.

20 I mentioned in my opening statement about my thesis.
21 When I mentioned it to General Richards of STRATCOM, he said
22 he was going to put CIA on the case to find it. As far as I
23 know, it hasn't been found. I hope it is never found.

24 But the other thing I want to do, this has been a very
25 good hearing. I am sure all of you had places where you

1 wanted to jump in.

2 File some supplemental testimony, if you would, if you
3 feel so moved, to amplify some of the points that you made
4 or to rebut some of the points that you heard.

5 We are wrestling with enormously important issues here,
6 trying to find our way toward what the best policy for this
7 country is and I, again, appreciate your participation.

8 Thank you to our senators and those who joined us by
9 Webex.

10 Senator Sullivan, you are prepared? Senator Kelly?

11 Thank you. The hearing is adjourned.

12 [Whereupon, at 6:09 p.m., the hearing was adjourned.]

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