DEPARTMENT OF DEFENSE NUCLEAR ACQUISITION PROGRAMS

AND THE NUCLEAR DOCTRINE

Wednesday, June 7, 2017

U.S. Senate
Subcommittee on Strategic Forces
Committee on Armed Services
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:32 p.m. in Room SR-222, Russell Senate Office Building, Hon. Deb Fischer, chairman of the subcommittee, presiding.

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

Senator Fischer: Good afternoon. The hearing will come to order. The subcommittee meets today to receive testimony on nuclear doctrine, strategy, and acquisition programs of the Department of Defense. This will be our final hearing in this subcommittee before the full committee conducts its markup of the fiscal year 2018 National Defense Authorization Act later this month.

I would like to express my thanks to Senator Donnelly and to the staff for the hard work that they have done. This has been a bipartisan effort based on the firm commitment both sides share in sustaining and modernizing our nuclear forces. On this committee, there is a strong bipartisan support for nuclear modernization based on the obvious wisdom of not letting our systems age to the point of unilateral disarmament.

As President Obama stated in his 2009 speech in Prague: Make no mistake, as long as nuclear weapons exist, the United States will maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to our allies.

I believe most of the members of this body agree with that statement, and understand that maintaining a capability, particularly one that has been allowed to age
the way our nuclear deterrent has, does require
modernization. In that regard, I am pleased to see the
department's request for the upcoming fiscal year make the
necessary investments in our nuclear forces.

We look forward to hearing from our witnesses in
greater detail about the fiscal year 2018 budget request and
where this budget does accept risk. The department has also
recently begun a new Nuclear Posture Review, which I hope
will take into account all the changes in the security
environment and plan for the future of our nuclear forces
accordingly.

Dr. Soofer, I am sure that we will hear from you on
this subject.

I thank the witnesses in advance for their testimony
today and for their work on this important mission. There
is nothing more important than maintaining the security,
reliability, and effectiveness of our nuclear weapons.

With that, I recognize the ranking member, Senator
Donnelly, for any opening remarks that he would like to
make.

Senator Donnelly?
STATEMENT OF HON. JOE DONNELLY, U.S. SENATOR FROM INDIANA

Senator Donnelly: Thank you, Madam Chair. I want to thank our witnesses for testifying today. It is good to see so many familiar faces.

I want to start by pushing back on a quote from a former Obama administration official that ran yesterday in a New York Times article. This individual called into question a bipartisan consensus we built on nuclear modernization over the past several years. From where I sit, that cannot be more wrong. We built a great partnership on this committee, and I am confident it will continue going forward.

Mr. Soofer, you have years of experience serving this committee in working with members on both sides of the aisle on these critical issues. I hope you agree with my assessment on the strength of our working relationship. Welcome back. I look forward to your testimony, and I am glad the department is putting your talents to good use on the upcoming Nuclear Posture Review.

General Rand and Admiral Benedict, thank you for your service and leadership. You are both well-known to this subcommittee, and we hold your capabilities and professionalism in the highest regard.

Mr. MacStravic, I am looking forward to a productive
relationship with your office. I want to be sure that, as
you reorganize the DOD Acquisition Organization, that the
Assistant Secretary for Nuclear, Chemical, and Biological
Defense Programs is kept intact. This office is critical to
maintaining effective oversight of our weapons programs,
especially as we confront the nuclear modernization bow
wave.

As we face an increasingly complex global nuclear
environment, I think Secretary Carter was absolutely right
when he called our nuclear deterrent the bedrock of our
national defense. I look forward to today's hearing as an
opportunity to hear about the successes and the challenges
faced by the department and how we can best support your
efforts, strengthen our deterrent, and protect our beloved
country.

Thank you again.

Senator Fischer: Thank you, Senator Donnelly.

With that, I would open the hearing for the opening
statements from our panel, and would remind each of you that
your full statements will be included in the record.

General Rand, if you would begin, please?
STATEMENT OF GENERAL ROBIN RAND, U.S. AIR FORCE,
COMMANDER, AIR FORCE GLOBAL STRIKE COMMAND

General Rand: Chairman Fischer, Ranking Member
Donnelly, and distinguished members of the subcommittee,
thank you very much for allowing me to appear before you
today to represent the men and women of Air Force Global
Strike Command. I testified several times before this
subcommittee, and I am looking forward to speaking about the
progress and the changes that have taken place in Air Force
Global Strike since our last meeting.

My priorities for the command remain the same. They
are mission, airmen, and families. We exist to serve the
Nation by providing strategic deterrence and global strike
in a world that is continually changing and challenging the
status quo.

Modernization of the nuclear force is mandatory.
Fiscal constraints, while posing planning challenges, do not
alter the national security landscape or the intent of
competitors and adversaries, nor do they diminish the
enduring value of long-range strategic forces to our Nation.
If we are to maintain or, in some instances, regain the
strategic lead we have on our potential adversaries, we
cannot delay this modernization.

Madam Chairman and subcommittee members, I want to
thank you for your dedication to our great Nation and the
opportunity to appear before you to highlight the need for modernization in efforts across Air Force Global Strike Command. I look forward to your questions.

[The prepared statement of General Rand follows:]
Senator Fischer:  Thank you, sir.

Mr. MacStravic, please?
STATEMENT OF JAMES A. MacSTRAVIC, PERFORMING THE
DUTIES OF UNDER SECRETARY OF DEFENSE FOR ACQUISITION,
TECHNOLOGY AND LOGISTICS

Mr. MacStravic: Chairwoman Fischer, Ranking Member
Donnelly, thank you for the opportunity to testify on the
fiscal year 2018 budget request for nuclear forces. I am
pleased to join General Rand, Dr. Soofer, and Vice Admiral
Benedict to discuss the Department of Defense's number one
mission: maintaining and modernizing a safe, secure, and
effective nuclear deterrent.

In my current role, I am responsible for advising the
Secretary of Defense and the Deputy Secretary of Defense on
all matters concerning acquisition of technology and
logistics, including the acquisition and sustainment of our
Nation's nuclear forces. I oversee systems acquisition for
the nuclear enterprise, lead the department's efforts to
acquire the strategic nuclear weapons delivery and command-
and-control systems required to meet the operational needs
of our Armed Forces, and serve as the chairman of the
Nuclear Weapons Council.

The Nuclear Weapons Council is a joint DOD and
Department of Energy/NNSA council established to facilitate
cooperation and coordination, reach consensus, and institute
priorities between the two departments as they fulfill their
responsibilities for U.S. nuclear weapons stockpile
In January, the President directed the DOD to conduct a comprehensive review of the roles of nuclear weapons in our national security, our strategy to fulfill those roles, and the capability requirements to implement that strategy. The Office of the Secretary of Defense and the joint staff are currently leading the Nuclear Posture Review, and my office is fully engaged.

The NPR will look at all elements of U.S. nuclear forces, policy, and posture to ensure that our nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to meet 21st century threats.

The department appreciates Congress' support in ensuring the credibility and reliability of our nuclear deterrent in an increasingly complicated and challenging world, and it is essential that Congress continue the support for the President's fiscal year 2018 budget request for nuclear deterrence forces.

This budget request demonstrates DOD's commitment to strengthening and modernizing an aging nuclear triad. It is very much appreciated that Congress recognizes and supports the challenges facing our nuclear enterprise. Our systems are well past their intended service lives, and we risk losing operational capability, reliability, and effectiveness.
Delaying modernization and warhead life-extension efforts would degrade the effectiveness of these systems and would put at risk the fundamental objective of these systems: nuclear deterrence.

As our delivery systems and warheads reach their limits for sustainability, our choice is not between keeping or updating our forces. Rather, our choice is between modernizing those forces or watching a slow and unacceptable degradation in our ability to deter adversaries who represent existential threats to our Nation. Because all of our systems require modernization at the same time, we need continued support from Congress to ensure adequate, consistent funding for these programs.

As the DOD moves forward with recapitalization of all three legs of the nuclear triad, and investment in the resilience of the NC3 architecture, the total cost to sustain the existing force and field a modernized replacement is projected to range from approximately 3 percent to 6 percent of total defense spending annually. This projection includes the total cost of the strategic delivery systems that have a nuclear-only mission, a portion of the cost of the B-21 bomber, which will have both conventional and nuclear roles, but no longer includes nuclear warhead life extension efforts that are funded by DOE and NNSA.
Again, we appreciate that Congress has recognized the severity of this problem and is taking steps to ensure adequate resources are made available for continuing these critical modernization efforts.

I want to take this opportunity to thank the committee for its support of the budget in fiscal year 2017. I look forward to your continuing support in fiscal year 2018.

Thank you again for the opportunity to testify. I am happy to answer any questions you may have.

[The prepared statement of Mr. MacStravic follows:]
Senator Fischer: Thank you, sir.

Next, Dr. Soofer, welcome back. It is good to see you.
Dr. Soofer: Thank you. Chairwoman Fischer, Ranking Member Donnelly, distinguished members of the committee, thank you for the opportunity to testify on the President's fiscal year 2018 budget request for nuclear forces. And thank you for your kind words.

The President directed the Department of Defense to conduct a comprehensive Nuclear Posture Review, and we expect to complete it by the end of this calendar year. I will not prejudge the outcome of the NPR but will outline some of the challenges and the questions that we face.

For decades, U.S. nuclear forces have provided the ultimate deterrent against nuclear attacks on the United States and our allies. Nuclear weapons remain a foundational element of U.S. strategy for deterring strategic attacks and large-scale war, and for assuring U.S. allies.

Effective deterrence requires a deliberate strategy and forces that are structured and postured to support that strategy within the existing security environment. Strategy, forces, and posture must also be flexible enough to maintain stability while adjusting to both the gradual and rapid technological and geopolitical changes. Recent years have, indeed, brought changes that the U.S. policy
must address.

Russia has undertaken aggressive actions against its neighbors that threaten the United States and its allies. It has elevated strategies of nuclear first use. It is violating the landmark Intermediate-Range Nuclear Forces Treaty, and it is modernizing a large and diverse non-strategic nuclear weapons force.

In the Asia-Pacific, China's increased assertiveness suggests a desire to dominate the region. China continues to modernize its rogue mobile and silo-based nuclear missile systems, as well as its ballistic missile submarine weapons system.

North Korea's leadership has demonstrated a willingness to accept economic countermeasures and international isolation in order to advance its nuclear capability and develop ballistic missiles able to strike the U.S. homeland, as well as our allies in the region.

New threats are emerging from nonnuclear strategic capabilities, most of which are not constrained by treaties or agreements. Technological advancements mean that proliferators might seek weapons of mass destruction development paths that are different from the ones that we are accustomed to detecting and countering.

As we conduct the NPR, Secretary Mattis has directed that we continue with the existing program of record for
recapitalizing our aging nuclear forces. After decades of deferred modernization, replacement programs must proceed without further delay, if we are to retain existing deterrent capabilities.

The critical mission of ensuring an effective nuclear deterrent is the highest priority mission of the Department of Defense, and one it shares with the Department of Energy and the Congress. And we look forward to continuing to work together in faithfully and responsibly fulfilling this mission.

Thank you again for the opportunity to testify. I look forward to your questions.

[The prepared statement of Dr. Soofer follows:]
Senator Fischer: Thank you very much.

Admiral Benedict, welcome.
STATEMENT OF VICE ADMIRAL TERRY J. BENEDICT, U.S. NAVY, DIRECTOR, STRATEGIC SYSTEMS PROGRAMS

Admiral Benedict: Thank you. Chairman Fischer, Ranking Member Donnelly, distinguished members of the committee, thank you for the opportunity to testify today representing the men and the women of your Navy's Strategic Systems Programs. Your continued support of our defense mission is appreciated, and everyone thanks you.

My written statement, which I respectfully request be submitted for the record, addresses my top priorities in detail. I would like to briefly address the long-term sustainment of the sea-based leg of the triad.

While our current life extension efforts will sustain the D5 system until the 2040s, the Navy is already beginning to evaluate options to maintain a credible and effective strategic weapons system to the end of the Columbia-class service life in the 2080s.

I remain strongly committed to the concept of intelligent commonality and the sharing of information with the United States Air Force as a method to reduce cost and risk.

At SSP, we will continue to look long-term and across the spectrum, from our work force and infrastructure to our industrial partners and our sister services and to our geographic footprint in order to maintain our demonstrated
performance.

Thank you for the opportunity to testify today about the sea-based leg of the triad and the vital role it plays in our national security. And at this time, I am pleased to answer your questions.

[The prepared statement of Admiral Benedict follows:]
Senator Fischer: My thanks to all of the panel for your opening statements.

General Rand, some observers have suggested extending the life of the current Minuteman system as a cheaper alternative to fielding the GBSD. Putting aside the technical and operational reasons why the GBSD is necessary, would SLEPing Minuteman-III actually be cheaper for us?

General Rand: Ma'am, the short answer is no. Our analysis is, over the 50-year lifespan of GBSD, it will be $159 billion, and the SLEP of the current Minuteman-III during that same period would be $160.3 billion. It is a $1.1 billion difference.

So just simply from financial, there is no benefit there.

Senator Fischer: Okay. Let's address some other reasons then, beyond the cost. Why can't the current system be extended past that 2036 date? Why do you believe that?

General Rand: Very good question. Thank you for the opportunity.

I have boiled down deterrence. To me, it has to have three elements to it. To deter the weapon that you use, you need to be reliable. The weapons that you use need to be able to be survivable and get to the target they are intended for and destroy the target. And, three, there has to be will.
In both cases with our current Minuteman-III, reliability and survivability is becoming increasingly difficult to do. If we were to continue with the Minuteman-III, we would have to replace the missile. There are attrition problems that we will have with the booster, with missile guidance in the post-booster vehicle that will require us to replace the missile.

So if we came up with 21st century technology for a missile that we are replacing, and we are going to use 1970s and 1980s technology for command and control of that, it will be very technically difficult to do, and it will be very expensive to do.

So those are the simple reasons. This is a wonderful system that has now reached its retirement.

Senator Fischer: And we have to look to the future on what is going to keep us safe, correct?

General Rand: Yes, ma'am. And, again, as I said, the enemy gets a vote in the survivability piece. We own the reliability piece. Our airmen will move mountains to make sure the Minuteman-III is reliable. But it is, will the weapon get to its intended target? And that gap is closing with each passing year, because the enemy's capabilities are improving.

Senator Fischer: Thank you, sir.

Dr. Soofer, opponents of the modernization program laid
out by President Obama, they often criticize it as propagating Cold War-era thinking, and they point specifically to his decision to retain the triad as evidence of this.

General Selva, who is the Vice Chair of the Joint Chiefs, he responded to this argument earlier this year in testimony before the House Armed Services Committee, and he noted that the triad had been examined by the joint staff three times in the last 5 years, and each evaluation resulted in the same conclusion, that we need to retain the triad.

Can you speak to this notion that our nuclear forces are based on outdated requirements? And isn't it true that, across-the-board, the size, composition, posture, and the policies relating to our nuclear forces have been updated continuously by each administration?

Dr. Soofer: Thank you, Senator. You are absolutely right.

This is what the previous administration had found. We are in the process of reevaluating that as well in our Nuclear Posture Review. But I think it is safe to say that the triad will remain the basis of our policies going forward.

We have at least three fundamental roles for nuclear weapons that have endured since the days of the Cold War and
the post-Cold War period, and that is to deter nuclear
attack, to help deter large-scale aggression, and to assure
our allies. And to do that, we have relied on a triad of
forces to provide the flexibility to do that and also to
ensure survivability against potential changes in the
gеopolitical environment or technology, or the adversary
being able to, say, be able to take out one leg of the triad
or two legs of the triad. If you have three legs, it
becomes much more difficult for them to even imagine
launching a first strike against U.S. forces.

Senator Fischer: For your personal opinion, do you
believe we are on the right path with regards to
gеopolitical changes that we are seeing in the world right
now?

Dr. Soofer: We have already begun the analysis in the
Nuclear Posture Review, and we started out with a look at
the strategic environment. What has changed since 2010?
And the differences are vast.

Just to begin with, Russia becoming a great power
adversary. The other conclusion that we are quickly coming
to is that, despite the fact that Republican and Democratic
Presidents since the end of the Cold War have been trying to
reduce reliance on nuclear weapons, other countries are
going in the other direction. Russia, China, North Korea,
other countries are increasing reliance on nuclear weapons.
So we have to take that into account in the way we evaluate our future nuclear requirements.

Senator Fischer: And as we look at the modernization program that we have in place, which we have been told is on schedule, is that enough?

Dr. Soofer: Senator, honestly, I do not know. This is the purpose of the Nuclear Posture Review, and we want to take a look at all these new developments. And I think you have been in some of the classified hearings with General Hyten and others, and you have seen what the Russians are doing in the way of novel nuclear weapons systems. You have seen the expansion of Chinese capabilities.

We have to take a good, hard look and determine whether the current program of record is sufficient or whether changes need to be made. I just cannot prejudge that at this time.

Senator Fischer: Thank you.

Senator Donnelly?

Senator Donnelly: Thank you, Madam Chair.

I want to start by addressing an issue that I think is too often overlooked and may be reaching a critical point as we move forward with our nuclear modernization efforts. That would be the availability of affordable U.S.-manufactured, high-reliability, radiation-hardened microelectronics. This industry has increasingly moved
offshore, and we are coming to a point where that may pose a real problem for the department.

Admiral Benedict, you have worked extensively with the Honeywell facility to conduct a long-term buy of their strategic radiation-hardened microelectronics for your D5 Life Extension Program. Now that your program is completing its procurements from Honeywell, my understanding is there will be a gap before future DOD programs will require these unique trusted parts. That adds serious risk to the viability of this critical capability.

What I am wondering is, can you tell the subcommittee, from your viewpoint, how serious an issue this is, Admiral?

Admiral Benedict: Thank you, sir.

I believe it is a very serious issue. As we did the D5 Life Extension, we went to extreme measures within the program to try to optimize the infrastructure that existed within the United States at that time, to the point where we combined the requirements from the guidance subsystems as well as the requirements from the missile subsystems, both of which are required to meet nuclear radiation-hardened levels versus sunbelt or space-hardened, which are much lower in comparison.

We did that, and then we went to a life of type buy in the shortest period that we could fiscally afford within the program, in order to optimize the infrastructure that
existed today. We drew extensively from the experience and
talent pool that exists at Crane, as part of
the Naval Surface Warfare Center, to optimize that.

And then in support of the Air Force, as they started
their GBSD competition, we provided the United States Air
Force the entire radiation-hardened electronics database
that we built through the Navy's life-extension effort as a
means to jumpstart that effort within the Air Force and cost
avoid the Air Force's efforts to reconstitute that from
scratch.

So we stand with you in your concern. And again, there
is a lull here for a period of years until the Air Force
comes through their GBSD down-select and ultimate award, at
which point they will need to draw from that type of
capability. And the question will be, what will be left?

Senator Donnelly: Mr. MacStravic, I would love to hear
what you have to say.

Mr. MacStravic: So --

Senator Donnelly: Okay, is there more?

Mr. MacStravic: There is more. So, sir, you are
talking about a systemic problem. Access to secure,
thrusted, and radiation-hardened microelectronics is a
critical requirement for both the Department of Defense and
the Department of Energy. The fiscal year 2018 President's
budget has a down payment on making sure that the Nation has
an assure supply of advanced electronics, fostering a next
generation of both strategic and nonstrategic weapons.

I believe it is going to take a rather long time for us
to ensure that we have a robust infrastructure. But we are
paying particular attention to both near-term shortfalls in
the availability of components and the long-term
availability of the core technologies we are going to need
to be able to dominate this war space.

Senator Donnelly: Admiral Benedict and General Rand, I
know you are both well-aware of the work that Naval Surface
Warfare Center Crane is doing with both SSP and the Air
Force to adapt the successful parts program developed for
the Trident Life Extension to support the acquisition of
GBSD.

I look at the role Crane is playing, and I look at the
problem we may face with Honeywell. It seems clear that, if
we are going to be undertaking all of these nuclear
modernization efforts, all of which have unique requirements
for radiation-hardened, high-reliability parts, we should
probably be coordinating our acquisition strategy across
programs to try to smooth the requirements from program to
program and sustain critical capabilities in the services
and industrial base.

Mr. Soofer, Mr. MacStravic, what are your views on
this, on the more commonality, the more opportunities as we
coordinate our acquisition strategy, the more chance we have
to sustain these capabilities?

Dr. Soofer?

Dr. Soofer: Senator, this would just be my personal
view. Again, we will be evaluating this in the context of
the Nuclear Posture Review.

So commonality can be helpful if it saves money, but if
you have too much commonality and something goes wrong with
a common part, then you are opening yourself to a potential
vulnerability.

Senator Donnelly: How about the coordination of
acquisition strategy, so that we can maintain some of these
critical locations?

Dr. Soofer: May I turn that over to the acquisition
expert?

Senator Donnelly: Sure.

Mr. MacStravic: So the short answer is yes. In fact,
we are doing that.

The acquisition strategy for GBSD is predicated on a
wide raft of information that was available, provided by
SSP, and informed all potential offers on opportunities,
technological as well as material, for enhancing
commonality, reducing cost, improving performance.

Once the Air Force has received the proposals and made
an award, my office will be conducting, and conducts
annually, a critical industrial base assessment, to
determine whether or not the design -- and remember, all we
are rewarding with GBSD is a design -- is going to cause
additional stress or additional opportunities for critical
suppliers at the second and third tier, which is where these
components would be performed.

So in addition to making sure that there is mutually
conforming acquisition strategies, my office ensures that
acquisition execution does not accidentally create gaps in
capability or systems.

Senator Donnelly: General, I was going to ask you the
same, but I am almost out of time, so I want to ask you
something else.

I understand you are planning a longer life for the B-
52, perhaps out to 2050. What is your view on the need to
modernize the engines, if we are going to do that?

General Rand: Thank you, Senator.

I think it is one of my top priorities that I would
like to pursue with the Department of the Air Force, and
that I am. There are many benefits to this, strategic and
tactical and operational level. The biggest one is we will
have a 30 percent efficiency and increased time on station.

That would reduce significantly our requirement for
tankers, and they could be used by other airplanes that
needed the tankers. Also, if we reused the engines today,
typically have a lifespan of 40, 50 years where you can
mount them and not take them off the wing again. That would
reduce our manpower requirements that we spend quite a bit
of time in the sustainment of the engines. As faithful as
the TF33 engine has been, it takes a lot of people and a lot
of maintenance to keep it airworthy.

And I think that, for those reasons, and the fact that
we are going to be flying the B-52 out to 2050, I think
there is a lot of value in assessing this.

Senator Donnelly: Thank you.

Senator Fischer: Senator Peters?

Senator Peters: Thank you, Madam Chair, for holding
this hearing.

And to our witnesses, thank you for your testimony this
afternoon. We certainly do appreciate it.

Dr. Soofer, I would like to ask about the Ballistic
Missile Defense Review, in particular, and the environmental
impact statements that are being conducted by the Missile
Defense Agency.

My understanding is that the environmental impact
statement is very far along in the process, if it has not
already been completed, which it may have, and it was due to
be released last year, actually. However, Deputy Secretary
Work informed the Armed Services Committee that because the
topic of a potential future interceptor site will be addressed in the review, the department will hold off on making a designation of a preferred site for a continental U.S. interceptor site.

As you know, the EIS was required in the fiscal year 2013 NDAA, so if a decision is made to move forward with the interceptor site, the initial environmental review is already complete. I believe the findings of that EIS would be very helpful and very useful in informing the review about the potential cost of environmental mitigation on those sites.

Could you explain to me, please, why the EIS for the interceptor site cannot be released until the review is completed?

Dr. Soofer: Senator, I do not know why it cannot be released. I will take that back for action.

You are correct. It has been completed. You are also correct that it is going to be factored into the Ballistic Missile Defense Review to see whether we even need an East Coast missile defense site.

But if I can get back to you, sir, I will find out why it cannot be released. Or, if it can be released, get it to you as soon as possible.

Senator Peters: I would appreciate that, if you could do that. And I appreciate that it is going to be considered
in the overall review in the assessment.

If I take that a step further, will the assessment utilize the findings on a potential site, in looking at a potential site that may be the lowest cost or the least impacted, that that will be a significant factor in which site is selected?

Dr. Soofer: Senator, I think at the level of the BMDR, we will ask the question of whether we need an East Coast site, how many interceptors we might need. But the determination of where that site would be may not be considered at the level of the Ballistic Missile Defense Review.

Senator Peters: Right. So that would be at the next level then, as you are evaluating specific sites.

Dr. Soofer: Exactly right.

Senator Peters: It is part of the broader review, so obviously, it is a critical component of the overall decision that will be made both as a general policy and then specific to sites.

Dr. Soofer: Yes, sir.

Senator Peters: I am also very concerned about the Russian deployment of an intermediate-range, nuclear-capable missile that is clearly in violation of the INF Treaty. And my question to you as well, Dr. Soofer, is, what concrete steps has the administration taken so far to react or to
deal with this violation of the treaty? And do you believe that they are sufficient to deny Russia a military advantage that they gained from the deployment of these intermediate-range missiles?

Dr. Soofer: Thank you, Senator.

The administration has concluded that the current situation is not sustainable. It is a violation, and we need to do something about it.

The National Security Council is reviewing steps to place more meaningful pressure on Moscow, both in terms of diplomatic and military measures to return them to compliance.

Meanwhile, the Department of Defense is reviewing military response options and framing this violation, this capability, again, in the context of the Nuclear Posture Review.

What does it mean? Why is Russia doing this? So, for instance, we know that Russia already has air-launch cruise missiles and sea-launch cruise missiles that can range similar targets in Europe. So the question is, why go forward? What is the military capability that Moscow derives from this? And we come to the conclusion that there must be some military capability that outweighs the political repercussions of actually violating the INF Treaty.
So for Russia, this has a meaningful military capability, and we need to assess what that is and how to address it.

Senator Peters: Well, so we should be expecting some concrete steps under what sort of timeline do you think?

Dr. Soofer: Senator, I do not have a timeline for you, to be honest with you.

Senator Peters: But do you think it is important to do it sooner rather than later?

Dr. Soofer: I believe it is. Yes, sir.

Senator Peters: And it is a priority now, as far as being under review?

Dr. Soofer: It is a priority. It is definitely a priority. The National Security Council, as I said, has already begun the process. They are well into the process, I should say.

Senator Peters: Because I think it is important. I agree. It is my belief, too, that sooner is better.

Dr. Soofer: Yes, sir.

Senator Peters: We have concern with our allies now who are wondering where the United States posture will be, not just on nuclear deterrence but where we are on defense of Europe as well. Taking some concrete actions would be very important.

I guess that leads to my final point and my concern
with how NATO allies, in particular, see the United States.

Certainly, Secretary Mattis has been very clear, I think, in U.S. support of our NATO allies. He has also been very clear that we need to have strong allies, that you cannot be a power without having a lot of good friends around you as well.

That is why it was disturbing that President Trump did not reaffirm the U.S. commitment to Article 5 of the NATO Treaty. In fact, the reports say he basically took it out of his statement when it was put in there, so he made a conscious effort not to mention that, which I think was unnerving to many people in Europe.

So, Dr. Soofer, last question, while I know you were not directly involved in any of that, but maybe you can comment. What role should the United States alliances play in our nuclear posture? Wouldn't you agree that it is just as important to reassure our allies as it is to deter our adversaries?

Dr. Soofer: Absolutely, Senator. As I pointed out, the fundamental roles for nuclear weapons are to deter our adversaries and assure our allies. And U.S. nuclear capabilities, dual-use capabilities in Europe, are a fundamental element of our extended deterrent that reassures our allies, and we will continue to do so. And the Secretary of Defense has made that clear.
Senator Peters: Thank you so much. I appreciate it.
Thank you, Madam Chair.

Senator Fischer: Thank you, Senator.

Senator Sullivan?

Senator Sullivan: Thank you, Madam Chair.

Gentlemen, thank you for your testimony here.

I just want to align myself with Senator Peters' comments on allies. I mean, we are an ally-rich Nation. Most of our adversaries and potential adversaries are ally-poor. It is probably the most important strategic advantage we have as a Nation, and we should be doing everything to deepen our alliances and expand them. And I know a number of us have had discussions with General Mattis, Secretary Tillerson. So I know the Chairman of the Joint Chiefs feels that way.

So I couldn't agree more. We have to do more to support our allies and expand. We have great opportunities, great opportunities, to expand alliances in Asia, in the Middle East. I think it is something you see strong, strong bipartisan support on. And I commend Senator Peters for his statement on that.

I also want to talk about missile defense.

Dr. Soofer, I am glad that you are there. I know your background. I know how much experience you have on the issue. You may have seen, 2 weeks ago, a number of us,
including Senator Peters and I, introduced a comprehensive Advancing America's Missile Defense Act.

Before I want to ask a couple questions about some of the elements of that, can you give the committee here a sense of the increased threat that we are seeing right now with regard to North Korea? There has been plenty of open committee testimony, unclassified, saying it is no longer a matter of if but when North Korea is going to have the capability to have an intercontinental ballistic nuclear missile that can range not just Alaska and Hawaii but Detroit and New York and Chicago and L.A.

Give us a sense of how you are reviewing that threat. And I know you cannot talk about timelines, but I think it is safe to say our intel community has consistently underestimated what they are doing, particularly with all his testing. Can any of you give us a sense just how real that is?

Dr. Soofer: Senator, thank you.

I would just repeat what the intelligence community has said. North Korea is poised to conduct its first ICBM flight test in 2017. I think that --

Senator Sullivan: They have already launched a satellite, so they have the ability to fire an ICBM, essentially. Isn't that correct?

Dr. Soofer: Exactly.
Senator Sullivan: So all they are missing is the reentry vehicle for a nuke, in terms of the capability?

Dr. Soofer: Their most recent tests demonstrated a capability to -- I think they have made further progress in their ability to develop reentry vehicles, in their last tests.

Senator Sullivan: That is another troubling development.

Dr. Soofer: So, again, we are going to have to factor all this into the Ballistic Missile Defense Review. But in addition to what you have seen in the open press, the classified information I think is even more dire. I mean, there is no question about it.

So the question for us, as we conduct a Ballistic Missile Defense Review is, what does it all mean? And what can we do? What are the potential options for addressing the threat?

Senator Sullivan: Our goal is to make sure that, you know, the Members of the Senate who are on the bill that we introduced 2 weeks ago, is to make sure that, whoever is in the White House, has the kind of strategic time that, if and when he has this capability, we can announce to North Korea, look, you try to shoot one or two or three. You know, you want to go out in a blaze of glory? We will shoot that down. We have the 99 percent capability.
I know we do not want to get into numbers. Do we have the 99 percent capability right now to shoot down a rogue missile from North Korea? If you do not feel comfortable answering in this setting, you do not need to.

Dr. Soofer: Senator, I think that we have a measure of protection today against the North Korean threat.

Senator Sullivan: But don't you think we can always enhance it, given that the threat is increased?

Dr. Soofer: The pace of the threat is advancing faster than I think was considered when we did the first Ballistic Missile Defense Review back in 2010.

Senator Sullivan: So some of the key elements of the bill that we introduced are more GBIs, more advancing in terms of the acceleration of multiple kill vehicles on top of those GBIs, and an integrated, layered sensor system that would make sure that all of our different theater THAAD, theater Aegis, homeland back here in America is integrated where we have an unblinking eye with regard to sensors, not only ground-based but in space.

Do you support those three pillars of how we are looking at missile defense, in your personal opinion? I know you are doing a review, but you are also someone who has a lot of knowledge on this issue.

Dr. Soofer: Senator, I do support those, personally.

And I think it is based on an approach that was outlined by
the previous administration. It enjoys support here in the Congress. And I think it makes eminent sense.

So the only question now is, based on how we understand the projected threat, whether that is enough.

Senator Sullivan: And as I am sure you are aware, we cut missile defense, the MDA funding, by almost 50 percent since 2006. Do you think the current budget proposed by the President does enough to start to reverse that trend, again, given the threat levels?

Dr. Soofer: Senator, I support the President's budget.

Senator Sullivan: Good answer. I am sure you had to answer it that way.

I do not think it does enough, so I think we need to do more.

Let me ask one final question, and it goes back to Senator Peters. As we are thinking about missile defense, we have THAAD. We have Aegis in the Asia-Pacific. The President talked about maybe a THAAD in Saudi Arabia.

Can you give us a sense -- and, again, I know this is what Senator Peters asked, but I think it is a really important question. How do we start to incorporate thinking of protecting our homeland?

The President talks about America first. I think we need America first on missile defense.

But protecting our homeland in a way that integrates
the usefulness and the knowledge we have from our allies, for example, the Israelis, as you know, in the NDAA every year, we have been very supportive of Iron Dome. But in some ways, they have technology and they have advanced in ways that could probably help us.

How do we need to look at integrating our alliances with protecting not only our allies but protecting our homeland with our allies?

Dr. Soofer: Senator, that is a key issue for the Ballistic Missile Defense Review. That is exactly what we are going to be looking at.

And I think everything that you have proposed makes great sense. We have to do that. And we also have to ask the question of whether the allies could do more, as well, on their own to provide protection.

So all of these factors will be weighed. And I hope we can continue a dialogue on this as we move forward on the Ballistic Missile Defense Review to get your views and other Senators as well.

Senator Sullivan: Great. Thank you, and congratulations on your new position. I am glad you are in that position.

Dr. Soofer: Thank you.

Senator Sullivan: Thank you.

Senator Fischer: Thank you, Senator.
Senator Warren?

Senator Warren: Thank you, Madam Chair.

And thank you to our witnesses for being here today. I want to ask some questions about the Nuclear Command, Control and Communication system, the NC3. I know it is actually 62 separate systems that involve everything from radios on the ground to systems operating on Air Force One. And I also know that NC3 is critical to making sure that the President can communicate with commanders even if the United States is under nuclear attack.

So, obviously, security and resiliency are key components here.

So, General Rand, as the head of Air Force Global Strike Command, you are the one who is in charge on this. How would you describe the age and health of the NC3 system today?

General Rand: Ma'am, the system was allowed to atrophy or did atrophy over the last 25 years. There is no denying that. We have owned up to that, I think, as a Nation. And the first thing you have to do is admit that. Then you have to identify -- and, as you mentioned, there is actually 107 subsystems of which the Air Force maintains 62 of those, of which is 70 percent of the NC3 budget.

So the first thing we did is we started this journey a little over 2 years ago of, what is NC3? We have identified
in a very thorough way the systems. Then we analyzed the
health of each of those systems, and that is ongoing. Some
of them are obsolete. They need to be replaced. Some need
to be upgraded.

We are doing those things. But we did not get here
overnight, and we will not fix NC3 overnight. But we are on
a good path. So I would tell you, where we are today --
and, ironically, I just had what we call an NLCC NC3 Council
that I chair with my fellow four-star major command
commanders yesterday, and we are at least now able to
identify and have a healthy discussion about what we need to
do to fix some of these things. We would not have been able
to do that 2 years ago.

There are good things on the horizon. We are about to
close the deal on getting the presidential national voice
capability, conferencing capability. Long overdue. We are
getting very close to the family of beyond line of sight.
It is called FAB-T terminal, along with the force element
terminal that will go on our bombers and tankers. That will
give it an increased receive capability of getting messages,
approaching anything to do with nuclear escalation.

These are some very meaningful things. We are
standardizing across our command posts in our operations
centers the ground-based terminals and radios for us to use.
It is called Global Ascent.
So there are many things that we are moving out on and making improvements on. So we are in a far better place than we were. I will assure you this has the top-level attention in the Department of Defense.

Senator Warren: Good. So when General Hyten says this is a top priority for me, you are all on board for that.

General Rand: Ma'am, I could not have told you what NC3 was 2 years ago. Now I dream about it.

Senator Warren: Okay. And the dreams are getting better, right?

General Rand: Periodically now, we brief AT&L and the Vice Chairman, and those go directly to the Deputy SECDEF and SECDEF. This is a priority with the Office of Secretary of Defense.

Senator Warren: Can I ask a question on that? Priority, I am very glad to hear this and hear the changes that you are making. I want to ask a slightly different question about urgency.

Given the age of the systems involved and how crucial they are to everything we do, do you have much margin for error in this process?

General Rand: Ma'am, I would tell you that we use the term "just in time." I will tell you, it should be called "late to need."

Senator Warren: Yes.
General Rand: In the nuclear enterprise, this is one element of it that we have allowed things to get to the point where we do not have the margin of error.

Senator Warren: Okay. All right.

General Rand: That is why I am here. That is why this modernization effort is so important, because any SLEP we have had has been eroded.

Senator Warren: It is at least helpful to know, as you say. If we do not know it, we cannot change it. And you have to come to us and let us know how we can be helpful.

I want to ask a question from a little different angle, too. You are the primary customer for NC3. You set the requirements. I know you are staffed up now to do this. But Air Force Materiel Command is responsible for actually acquiring the systems to meet your requirements.

So when General Hyten was here recently, he said that he was concerned about staffing gaps on the acquisition side of the NC3 program.

General Rand: Yes, ma'am.

Senator Warren: So let me ask you, General Rand, what is the Air Force doing in this budget to address the acquisition challenges associated with NC3?

General Rand: Thank you for that. I am in very close cahoots with my dear friend Ellen Pawlikowski, who is the Commander of Air Force Materiel Command.
Yesterday, at our council meeting, two issues came up, the funding for the FAB-T FET it is called, that Force Element Terminal, and for the programs that we have, many of the programs, is to make sure that we have the people who can manage those programs from cradle to grave. And we are going to the Air Force to discuss now how we can get the manning where those gaps exist.

But we have come a long way, again, in the last year. Now the civilian hiring freeze slowed us down a little bit, but we have reprieve from that. I have been able to bring in an additional 235 people to Air Force Global Strike.


General Rand: Yes, ma'am. We stood up, 1 April, we stood up the NC3 center at Air Force Global Strike and Ellen, we are working -- and for the first time, we have in NC3 program manager at Hanscom Air Force Base in Boston. And we have identified what she needs.

We need to do a full court press to try to get an additional 50 to 60 people to help with the nuke weapons center and the NC3 portfolio. And there are a variety of programs that we need to man up, and we are going to do it.

Senator Warren: Good. I appreciate the work that you are doing.

I am out of time now, but I am going to send some questions for the record to Mr. MacStravic just about your
role in helping out on this.

I am glad you are making this a real priority, and I understand the urgency. And if we can be helpful, I hope you will let us know.

General Rand: Thank you very much.

Senator Warren: It is important.

General Rand: I appreciate your support.

Senator Warren: Thank you. You bet. Thank you.

Thank you, Madam Chair.

Senator Fischer: Thank you.

Senator Cotton?

Senator Cotton: Thank you, gentlemen. Thank you for your testimony today.

General Rand, in Congress, we often talk about ballistic missile defenses from the threats we face of rogue nations like North Korea, for instance, but our adversaries are not sleeping on this potential technology. They, too, would like to develop ballistic missile defenses. How can we ensure that our reentry vehicle system remains survivable against any emerging threats by our adversaries?

General Rand: Sir, we need to develop emerging technologies. That is why I am a huge proponent for GBSD. Before you came in, I had mentioned that there are two aspects to deterrence: reliability, which we own, and the weapon survivability, which the enemy gets a vote in. And
we need to do some things that we will not be able to do
with existing systems to ensure that the weapon will get to
its intended target with the intended effect that we have.
That is the essence of why we need GBSD. So what we
need to do is to pursue this acquisition strategy and stay
true to course and field this capability by the time we
need, which is 2030. Because that is when I see this big
closure of the technology gap that we have had the benefit
of having for many decades that is getting smaller and
smaller. And if we do not do something, that gap will
close.

Senator Cotton: And you say there are things we need
to do, and we need to complete this acquisition strategy.
Could you be more specific about that?

General Rand: Yes, sir. We are on track. Right now,
we are going to down select to two companies to go for GBSD
this summer to go into the TMRR, the Technological Maturity
Risk Reduction. This is the process.
In 3 years, then we will down select to the company.
We are on track with the strategy.

Any specifics, if I may, sir, to talk about what those
emerging technologies are, I would like to take into a
closed session about what we would need to the guidance
system, to the warhead, et cetera.

Senator Cotton: So the specifics that would ensure our
reentry vehicles are survivable in the GBSD world as
compared to today's world you would like to discuss in a
classified setting.

General Rand: I would need to do that, yes, sir.

Senator Cotton: I understand.

Since we are on GBSD, though, I understand that one
option under consideration is moving operations into an
integrated command center, so you just have one building on
base that host missile crews, maintainers, and security
forces. That would mean instead of having 15 crews on alert
in a missile field, you would have six, seven, or eight on
alert.

This concept is a direct result of the RFP mandating a
reduction in operations and sustainment costs. No doubt,
the missiliers would appreciate not having the 2-hour drive
out to launch control centers. And I know that we have to
look for places to trim costs in this budgetary environment.

But the large number of command centers and launch
facilities in the three missile fields are, in fact, a real
irritant to enemy planners. I am concerned that this setup
might give adversaries one target instead of multiple
targets, freeing up some of their forces to strike other
militarily significant targets or even target American
cities.

So could you please elaborate on how you can reduce on-
alert missile field crews without reducing missile field resiliency?

General Rand: Yes, sir. I think that is a fair question. I think that these would be moderate improvements, and that would not take away from complicating the enemies' targeting. There would still be a lot of launch facilities they would have to be accountable for, and I think that we would still give them a targeting problem.

We are mandated by the New START Treaty right now. I am happy to report that we have completed that. We still have 450 launch facilities that the enemy has to be accounted for.

Senator Cotton: Thank you.

Dr. Soofer, congratulations on your new position.

Dr. Soofer: Thank you.

Senator Cotton: Our committee's loss is the country's gain.

I would like to talk briefly about satellite doctrine. Decades ago, we had satellites that were, oftentimes, single-mission satellites. There was an understanding that, if a sensor was nuclear-designated, that the United States might take it as a precursor to a nuclear strike, if there was any effort to impair or destroy that satellite.

Obviously, one trend in space today is multi-mission platforms. How would that trend in satellite technology
affect our doctrine as it relates to any effort to disable
or destroy American satellites?

Dr. Soofer: Sir, space is actually not in my
portfolio.

Senator Cotton: But you are very smart on nuclear
doctrine, and I think nuclear doctrine is.

Dr. Soofer: One of the key things we will be looking
at in the Nuclear Posture Review is potential
vulnerabilities to the U.S. nuclear deterrent. So we will
be examining that very issue.

So if the adversary can blind our indications and
warning to an attack, that is a big deal. One way they
would do that, of course, is through satellites. If our
satellites are vulnerable, we have to figure out some way to
compensate for that.

Deaggregating, spreading assets around, makes a lot of
sense. There are other ways of doing it. I remember many
years ago, we had a concept called Operationally Responsive
Space, where we had small satellites in the barn that, if
our main satellites were taken out, we could immediately
launch new capabilities.

So I think all of these points will be addressed as
part of a broader National Defense Strategy. But the key
point about vulnerability of indications and warning will be
something that we will look at carefully in the Nuclear
Posture Review.

Senator Cotton: I think as part of that review, you do need to consider the doctrinal implications. In a world in which a satellite sensor is nuclear-only, it is only designed to detect nuclear launches of our adversaries, it is a reasonable understanding for a nation-state to say a strike on that satellite will be treated as an early warning of a first strike against our territory.

If, in an evolving space environment, satellites carry not only nuclear sensors but say GPS positioning packages or communication packages, our adversaries might rightly say you can no longer treat that as an early indicator of a nuclear strike, if we are going to be in a conventional environment and treat that as a communications or GPS positioning package. It is just something that I think we need clarity on, as space technology has evolved.

Thank you.

Senator Fischer: Thank you, Senator Cotton.

Senator Heinrich?

Senator Heinrich: I will just start, for the record, and mention that ORS is doing quite well. And I think, this year, their budget actually reflects the direction and trend that we have all seen coming for quite some time, and I am excited about that progress.

I want to start with General Rand and Admiral Benedict.
Like Senator Donnelly, I continue to be very interested in the ensured supply of domestic, trusted microelectronics. The Air Force and the Navy are pursuing separate refurbishments of fusing systems for the W88 and the W87, which includes partnering with Sandia National Labs. Sandia's portion of the work for Navy and Air Force includes designing, qualifying, and manufacturing critical strategic radiation-hard microsystems for both of those, the 88 and the 87.

How important is strategic radiation-hard capability to the U.S. deterrent, and to both the Air Force and the Navy, consequently?

Admiral Benedict: So in the program that we refer to as the Alt 370, which is the new arming, fusing, and firing circuit for the W88, we were directed, the Navy and the Air Force, to work that program jointly. The Navy has the lead in support of that effort.

That has proven to be, I would say, the example, I think, when General Rand and I talk about commonality and interservice support. I think the Alt 370, that fuse effort, is this sort of model that I look to.

We have made accommodations within our reentry body, as has the Air Force, in order to develop sort of a tiered approach. So there are components within that device that are absolutely common and will be utilized exactly in the
Air Force program. There are components in there that are adaptable based on the fact that our reentry body flies on a Trident. Their reentry body will fly on a Minuteman or a GBSD. Then there are unique based on the two missiles.

In doing so, we were able to, I would say, assist the Air Force in cost-avoiding a significant amount of money. And what it did is it allowed both services as well as Sandia to optimize the talent pools and grow those over time.

So I applaud and I am 100 percent on board. That program is on schedule for a December 19 IFI in the United States Navy, and all the work has been transferred to the Air Force in support of their fuse program, sir.

Senator Heinrich: Given that the MESA facility there at Sandia is soon going to reach the end of its service life, what are your thoughts on how to make sure we maintain that niche capability of both research and production of rad-hard trusted electronics?

Admiral Benedict: Yes, sir. I believe that within the Navy and the Air Force, there are four unique, specific technologies that, if the United States Navy or the United States Air Force is not in design, development, or production, then industry, in and of themselves, will be incapable or have no economic incentive to sustain, one of them being solid rocket motors at the strategic grade, at
both the Navy and the Air Force. The other one is radiation-hardened electronics to the levels that we need, which are far above sun radiation. The other one is reentry body materials, and the specific unique aspects of those. Then the fourth one is our guidance requirements for both ICBMs and SLBMs.

So I can remember back to the day when there were congressionally mandated technology application programs, which ran at a certain level. And they were generated, directed by Congress, so that the Navy and the Air Force could sustain those capabilities as well as grow the personnel talent in order to implement in the future.

Over time, those have basically waned to zero. So I think those are absolutely necessary attributes. Today, what we are doing is working collaboratively, the Navy and the Air Force, to try to, through commonality, share some of those requirements.

But they are on the edge of extinction. If we find ourselves in a period, as we do now, the Navy coming out of D5 LE, a period of time before GBSD ramps up, the Nation, not the Navy or the Air Force, but the Nation, I believe, is at risk.

Senator Heinrich: General?

General Rand: I do not have anything to add. I agree with Admiral Benedict completely on that.
Senator Heinrich: It sounds like we need a MESA 2.0.

But moving to another related issue, General Rand, I wanted to ask you, it is my understanding that, last year, Kirtland Air Force Base actually became a Global Strike Command base.

How is that transition going? What are you doing to integrate the base into your command?

General Rand: Yes, sir. Thank you.

Senator Heinrich: Bring us up to speed on that, if you could.

General Rand: Really, really proud to have Kirtland in the command. It made all the sense in the world. I would tell you the transition is over. It was very seamless.

Senator Heinrich: Great.

General Rand: It was a snap the chalk line, and we did it. Eric Froehlich and his wife just got the O'Malley Award for the best wing commander and spouse in the Air Force. Great leadership matters.

But it made sense, if I may, because if Air Force Global Strike is designated the lead command for all things nuclear in the United States Air Force, there is so much at Kirtland. It made all the sense in the world to include the Underground Munitions Maintenance and Storage Complex, Sandia labs, the Nuclear Weapons Center, the Safety Center, all the things that we do.
So this has just been an outstanding opportunity for us
to kind of share best practices on all the things that we
do.

Senator Heinrich: Great. I am glad to hear that.

Assistant Secretary Soofer and General Rand, for that
matter, New START is set to expire in 2021. What are we
doing to prepare for that? Is the U.S. seeking to extend
the treaty? If either the Russians or the U.S. decided to
pull out of it, what would be the consequences for strategic
stability? And what would we potentially lose in terms of
defense and intelligence benefits?

General Rand: If I may, first, and then I will defer
to Dr. Soofer to give the policy part, for me, it was the
compliance piece. I am happy to report that we are in
compliance with what we were required to do with our bombers
and our ICBMs.

As of 2 June, we are 3 months ahead of STRATCOM's
request date. It was February 2018, I think, that we had to
meet the New START, and we are complete. So compliance, the
United States Air Force is in full compliance with New
START.

And I will defer to you.

Dr. Soofer: Admiral Benedict, why don't you --

Admiral Benedict: Sir, if I may, we have completed our
conversion on the New START Treaty on 13 of the 14 boats.
The remaining boat will be done next month. It has departed the shipyard, so it just has been one of access. So we will complete next month, well in advance of General Rand's acknowledgment of the February 2018 requirement.

Senator Heinrich: Great.

Dr. Soofer?

Dr. Soofer: Senator, I believe the Secretary of Defense has confirmed the importance of the New START Treaty. The National Security Council is conducting a review of our arms control policies and our treaties, and they will take into account New START as well. And we are looking at the INF Treaty, so that will all be weighed in.

But in terms of how we assess the New START Treaty, this is the way I look at it. It is not so much what is in treaty but what is not in the treaty that may present the problem that we are going to look at in the Nuclear Posture Review.

So the New START Treaty did not address a whole host of nonstrategic nuclear weapons, and it is those categories of weapons that are on the rise. So we have to understand what the implications are of that for nuclear posture.

So I would just say that there is a broader issue than just whether or not to stay within the New START Treaty. Even if you stay in the New START Treaty, there may be strategic implications.
Senator Fischer: Thank you, Senator.

We do have some time, so I would like to do second round. Let's set it at a 4-minute round, please.

General Rand, in your prepared testimony, you state that lessons learned from the difficulty sustaining and modernizing that B-2 small fleet should be considered when determining the purchase size of future acquisitions such as the B-21.

Could you elaborate on that, please?

General Rand: Yes, ma'am. I mean, obviously, the first thing is to meet combatant commander requirements. So the reason that I have established what I consider to be a minimum of 100 B-21s has everything to do with being able to meet the requirements that the combatant commanders have established for us.

But we have to learn from the painful experience of the B-2. That program was going to be well over 100. It got slimmed down, and it eventually ended up at 21. It became very expensive, and now, as we find, very difficult to maintain a small fleet. As it is now 25 years old, and there are so few of them, we are having trouble with subcontractors, parts, the supply chain.

These are just things that you do not have to deal with when you have a larger fleet. But, again, the size of the fleet is not going to be based just on that. It is really
to meet requirements.

Senator Fischer: But it is a good lesson.

General Rand: It is a very good lesson.

So two things would happen, ma'am. If we did not get
the minimum of 100, I would not be meeting critical
combatant commander requirements, and it would be another
nightmare to maintain. And we would have to keep other
bomber fleets that I think have lost their utility longer
than what they are intended for.

Senator Fischer: Thank you, sir.

And, Admiral Benedict, can you talk about the proposal
to relocate operations that are currently performed at the
Naval Industrial Reserve Ordnance Plant to Colorado and
Florida, and specifically the cost savings that this would
achieve?

Admiral Benedict: Yes, ma'am.

You are referring to Lockheed's decision and our
support of that decision to move the Fleet Ballistic Missile
Program out of Sunnyvale, California, and relocate
approximately 650 individuals to their Lockheed facility in
Denver, Colorado, and down to the Space Coast of Florida.
We fully support that and endorse that effort by Lockheed
Martin.

What that will entail is about 300 design engineers
moving from Sunnyvale, California, to Denver, and about 350
individuals that do operational support in the program office moving down to the Space Coast of Florida.

We currently have about 700 Lockheed Martin employees in the Space Coast. So our footprint for Lockheed Martin, which is my prime missile contractor in Florida, will be well over 1,000 individuals.

If you go to Sunnyvale, California, where Lockheed is, at one time, it was a sprawling campus. It is now literally a much smaller campus surrounded by Google, Facebook, Yahoo, Juniper. You can go on and on and on. And the ability to attract talent at a rate that I can afford, both I and Lockheed recognized, was not a sustainable program until 2084.

So I applaud completely the decision by Lockheed to take this time and invest the amount of analysis that they have done in order to make the move at this point in the program before we start back up with a potential follow-on missile to the Trident II D5. So we are fully on board, ma'am.

Senator Fischer: Thank you.

You and I have had discussions about the Columbia-class submarine and the production schedule that we are looking at there, that there really is no margin for delays in that schedule if we are going to have them on watch in 2031. That is only 14 years from now. This is DOD's second-
largest acquisition program, so I certainly hope nothing
goes wrong as we are moving forward.

As we look at the history, though, when it comes to
acquisition at DOD, sometimes that would suggest that
contingency planning is a must. So can you discuss what
steps, if any, are being taken to mitigate potential delays
in that Columbia-class program?

Admiral Benedict: Yes, ma'am.

We have spent an appropriate amount of time under close
scrutiny of Mr. Stackley when he was the Assistant Secretary
of the Navy, and he remains personally and professionally
invested in this program as the Acting Secretary.

Throughout the development of the program, we took
steps to mitigate risk. I will give you a couple, at least
on my side -- the strategic weapons system.

We authorized the development and formulation of what
we call the Strategic Weapons Systems Ashore facility down
in Space Coast Florida at the Naval Ordnance Test Unit.

That facility is up. And half of this facility is
certified. The other half is on track to be certified.

What that will allow us to do is prove all the
shipyard-integrated test programs, which will expedite the
acceptance of the platforms as they move through not only
Electric Boat but also the U.K. shipyard over in Barrow-in-
Furness in the United Kingdom.
So that is a major risk reduction. The other major risk reduction is the facility that we built at China Lake, California, at the Naval Air Warfare Center. That is where we will certify the ability to get back into production of our launch tubes.

We have been out of production of launch tubes for about 25 years. Many, many of the materials have changed. Our glues, our adhesives, the materials that are absolutely paramount to a successful launch underwater, which you had the opportunity to witness, of a missile the size of a Trident. So we will use that facility to certify the design. Then we will go into production there.

On the shipboard side, Naval Reactors has their own program that they are operating out of Philadelphia, Pennsylvania, to ensure that their components are tested well in advance and certified to move toward the platform itself.

Then with Electric Boat, in concert with the United Kingdom, we have a first article test program where we will build early and jointly to ensure that the design is valid and that the design can be produced not only on schedule but, most importantly, on cost as we move forward.

So all these things are moving in parallel, and then they all converge starting in, essentially, 2021, so that we can put the boat in the water in 2028, and be on patrol in
2031.

Yes, ma'am.

Senator Fischer: Thank you, sir.

Senator Donnelly?

Senator Donnelly: Thank you, Madam Chair.

Dr. Soofer, when we look at the cost of our nuclear deterrent as a percentage of the defense budget, what is the cost of our nuclear forces now versus the cost during the peak years of the modernization effort?

Dr. Soofer: Thank you, Senator.

Actually, I have a chart here, if we could hand them out. This is a chart that may look familiar to you. We have used it in the past in the committee.

If you look at the box in the lower right-hand corner, this is all the new stuff that we need to buy, the triad, the nuclear command and control.

If you look at the peak there, it is about 6.5 percent of the defense budget. If we did not do the recapitalization, we would still be spending about 3 percent.

So today, we spend about 3 percent of the defense budget on all of our nuclear enterprise. That is to operate it, to sustain it, and to maintain it. The additional increment for the modernization, the recapitalization, would be probably another 3 percent, 3.5 percent.
Senator Donnelly: Okay.

Another question I wanted to ask you about, obviously, this situation with North Korea is difficult. It is tense.

Dr. Soofer, what are your thoughts on how to best reassure our allies in South Korea while effectively deterring North Korea, especially given the increasing sophistication of the program?

Dr. Soofer: Thank you, Senator. It is a multifaceted approach.

So the Secretary of Defense visiting South Korea is one way of assuring them. We have bombers that overfly South Korea to send a message. We take their senior military officials to visit certain U.S. nuclear capabilities. We hold dialogues with their military and with their Ministry of Foreign Affairs twice a year, once in their country and once in the United States, to talk about U.S. nuclear strategy, to try to explain some of our capabilities.

So it is a combination of the messaging and the actual capabilities that we show them that hopefully reassures them.

Senator Donnelly: And my last question is, Admiral Benedict, I was wondering, what are the main risks that you are concerned about with the construction of the launch tubes for the Columbia class? I know you talked a little bit about changing materials from before and all these kinds
of things. What are the things that keep you concerned?

Admiral Benedict: I think, first and foremost, is the fact that we have been out of production of launch tubes for approximately 25 years. It is a fairly significant production run. It is 240 launch tubes for both the U.S. and the United Kingdom.

Obviously, a lot has changed in those 25 years, specifically the environmental aspects that we are now required within the United States and specifically in the State of California. We produce our launch tubes in Sunnyvale, California, at Northrop Grumman.

So as we do that, the original design called for some very unique adhesives, glues, materials, which if we could find them, which we can't, we would probably have a hard time incorporating them into the current design. So we have had to replicate or, in many cases, supplement different materials.

Again, as you had the opportunity to ride the boat and watch the launch of a Trident, it is a very simplistic looking launch tube, but it is a very complicated design to keep that pressure underneath that missile as we eject it in a steam bubble. That whole launch tube has to sustain that shock and that impulse while the missile travels through it.

So that is what keeps me up. Then, of course, the other thing is the work force. There is no work force that
Senator Donnelly: Let me ask you one more.

Admiral Benedict: Yes, sir.

Senator Donnelly: And that would be, have you reviewed any other locations within the Navy inventory to host all or some of the Sunnyvale jobs?

Admiral Benedict: We have. Again, part of our acquisition strategy is that we hold the prime accountable to make the most economic decision. We are appropriately facilitated within Northrop Grumman in Sunnyvale, California, which is where we built every launch tube, in terms of tooling and facilities, to start that production line there.

Just as we made the decision to move out of Sunnyvale, California, with Lockheed Martin, I have raised that same question with every one of my industrial partners thinking long-term toward 2084.

Senator Donnelly: For Lockheed Martin, too?

Admiral Benedict: Yes, sir.

So I would say that Northrop has made the decision that, given the infrastructure and the investment that they have there, that is the most economic place to produce this run. But I know that they are looking at options after the production run would end on where they should locate.

Senator Donnelly: Has Lockheed looked at other options
than the Space Coast and Colorado?

Admiral Benedict: Well, Lockheed looked at those and made that decision, so Lockheed FBM is out of Sunnyvale. Now, there remains THAAD and other programs. Satellite programs will remain in Sunnyvale.

The only program moving completely out of Sunnyvale, California, for Lockheed Martin is the Fleet Ballistic Missile Program. Northrop also produces a significant amount of material for PEO Submarines and Naval Reactors. So turbines and gears, all that material is produced in the same factory that I produce the launch tubes.

So there is a sufficient throughput through that factory to justify the launch tube production in that facility.

Senator Donnelly: Thank you, Madam Chair.

Senator Fischer: Thank you, Senator Donnelly.

I am going to ask another question, if you want to follow up again, too, then.

We are having a lot of fun here today. So thank you. General Rand, I just want to point out something in your written testimony that you said. "I cannot overemphasize this point: B-21 and B-52 without LRSO greatly reduces our ability to hold adversaries at risk, increases risk to our aircraft and aircrew, and negatively impacts our ability to execute the mission."
Would you like to comment on that?

General Rand: Ma'am, I do not know how I can make it any clearer. I stand by those words.

Senator Fischer: And you would be supportive of us moving forward on that, correct?

General Rand: Absolutely.

Senator Fischer: Thank you, sir.

General Rand: Again, the only comment -- to me, it is just critical and fundamental that we have long-range standoff, with or without a B-21.

The current long-range standoff nuclear weapon we have, the ALCM, Air Launch Cruise Missile, is 37 years old today. It will hit 40 by 2020. By the time we replace it in 2030, it will be a 50-year-old weapons system.

For the same reason I talked to Senator Cotton about the importance of being able to replace GBSD, if we want the weapon to hit its intended target, we have to modernize it.

Senator Fischer: Thank you, sir.

Senator Donnelly, do you have anything to add?

Senator Donnelly: I just want to thank the witnesses for being here today. Thank you.

Senator Fischer: I would thank you all for being here today. We always appreciate the information that you provide to us.

If you do receive written questions from any members, I
would ask that you answer those and return them promptly.

[The information referred to follows:]

[SUBCOMMITTEE INSERT]
Senator Fischer: Thank you again for your attendance.

We are adjourned.

[Whereupon, at 3:54 p.m., the hearing was adjourned.]