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Before the

Subcommittee on Strategic Forces

COMMITTEE ON  
ARMED SERVICES

**UNITED STATES SENATE**

DEPARTMENT OF DEFENSE NUCLEAR ACQUISITION  
PROGRAMS AND THE NUCLEAR DOCTRINE

Wednesday, May 7, 2017

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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.

Present: Senators Fischer [presiding], Cotton,  
Sullivan, Sasse, Donnelly, Heinrich, Warren, and Peters.

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

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

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

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

23           I believe most of the members of this body agree with  
24 that statement, and understand that maintaining a  
25 capability, particularly one that has been allowed to age

1 the way our nuclear deterrent has, does require  
2 modernization. In that regard, I am pleased to see the  
3 department's request for the upcoming fiscal year make the  
4 necessary investments in our nuclear forces.

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

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

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

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

21 Senator Donnelly?

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1           STATEMENT OF HON. JOE DONNELLY, U.S. SENATOR FROM  
2 INDIANA

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

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

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

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

25          Mr. MacStravic, I am looking forward to a productive

1 relationship with your office. I want to be sure that, as  
2 you reorganize the DOD Acquisition Organization, that the  
3 Assistant Secretary for Nuclear, Chemical, and Biological  
4 Defense Programs is kept intact. This office is critical to  
5 maintaining effective oversight of our weapons programs,  
6 especially as we confront the nuclear modernization bow  
7 wave.

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

16 Thank you again.

17 Senator Fischer: Thank you, Senator Donnelly.

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

21 General Rand, if you would begin, please?

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1           STATEMENT OF GENERAL ROBIN RAND, U.S. AIR FORCE,  
2           COMMANDER, AIR FORCE GLOBAL STRIKE COMMAND

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

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

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

24          Madam Chairman and subcommittee members, I want to  
25          thank you for your dedication to our great Nation and the

1 opportunity to appear before you to highlight the need for  
2 modernization in efforts across Air Force Global Strike  
3 Command. I look forward to your questions.

4 [The prepared statement of General Rand follows:]

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1 Senator Fischer: Thank you, sir.

2 Mr. MacStravic, please?

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1           STATEMENT OF JAMES A. MacSTRAVIC, PERFORMING THE  
2 DUTIES OF UNDER SECRETARY OF DEFENSE FOR ACQUISITION,  
3 TECHNOLOGY AND LOGISTICS

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

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

21           The Nuclear Weapons Council is a joint DOD and  
22 Department of Energy/NNSA council established to facilitate  
23 cooperation and coordination, reach consensus, and institute  
24 priorities between the two departments as they fulfill their  
25 responsibilities for U.S. nuclear weapons stockpile

1 management.

2 In January, the President directed the DOD to conduct a  
3 comprehensive review of the roles of nuclear weapons in our  
4 national security, our strategy to fulfill those roles, and  
5 the capability requirements to implement that strategy. The  
6 Office of the Secretary of Defense and the joint staff are  
7 currently leading the Nuclear Posture Review, and my office  
8 is fully engaged.

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

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

19 This budget request demonstrates DOD's commitment to  
20 strengthening and modernizing an aging nuclear triad. It is  
21 very much appreciated that Congress recognizes and supports  
22 the challenges facing our nuclear enterprise. Our systems  
23 are well past their intended service lives, and we risk  
24 losing operational capability, reliability, and  
25 effectiveness.

1           Delaying modernization and warhead life-extension  
2 efforts would degrade the effectiveness of these systems and  
3 would put at risk the fundamental objective of these  
4 systems: nuclear deterrence.

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

14           As the DOD moves forward with recapitalization of all  
15 three legs of the nuclear triad, and investment in the  
16 resilience of the NC3 architecture, the total cost to  
17 sustain the existing force and field a modernized  
18 replacement is projected to range from approximately 3  
19 percent to 6 percent of total defense spending annually.  
20 This projection includes the total cost of the strategic  
21 delivery systems that have a nuclear-only mission, a portion  
22 of the cost of the B-21 bomber, which will have both  
23 conventional and nuclear roles, but no longer includes  
24 nuclear warhead life extension efforts that are funded by  
25 DOE and NNSA.

1           Again, we appreciate that Congress has recognized the  
2 severity of this problem and is taking steps to ensure  
3 adequate resources are made available for continuing these  
4 critical modernization efforts.

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

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

10           [The prepared statement of Mr. MacStravic follows:]

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1 Senator Fischer: Thank you, sir.

2 Next, Dr. Soofer, welcome back. It is good to see you.

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1           STATEMENT OF ROBERT M. SOOFER, PH.D., DEPUTY ASSISTANT  
2           SECRETARY OF DEFENSE FOR NUCLEAR AND MISSILE DEFENSE POLICY

3           Dr. Soofer: Thank you. Chairwoman Fischer, Ranking  
4           Member Donnelly, distinguished members of the committee,  
5           thank you for the opportunity to testify on the President's  
6           fiscal year 2018 budget request for nuclear forces. And  
7           thank you for your kind words.

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

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

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

1 must address.

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

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

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

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

24           As we conduct the NPR, Secretary Mattis has directed  
25 that we continue with the existing program of record for

1 recapitalizing our aging nuclear forces. After decades of  
2 deferred modernization, replacement programs must proceed  
3 without further delay, if we are to retain existing  
4 deterrent capabilities.

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

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

13         [The prepared statement of Dr. Soofer follows:]

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1 Senator Fischer: Thank you very much.

2 Admiral Benedict, welcome.

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1           STATEMENT OF VICE ADMIRAL TERRY J. BENEDICT, U.S.  
2   NAVY, DIRECTOR, STRATEGIC SYSTEMS PROGRAMS

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

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

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

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

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

1 performance.

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

6 [The prepared statement of Admiral Benedict follows:]

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1           Senator Fischer: My thanks to all of the panel for  
2 your opening statements.

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

8           General Rand: Ma'am, the short answer is no. Our  
9 analysis is, over the 50-year lifespan of GBSD, it will be  
10 \$159 billion, and the SLEP of the current Minuteman-III  
11 during that same period would be \$160.3 billion. It is a  
12 \$1.1 billion difference.

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

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

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

20           I have boiled down deterrence. To me, it has to have  
21 three elements to it. To deter the weapon that you use, you  
22 need to be reliable. The weapons that you use need to be  
23 able to be survivable and get to the target they are  
24 intended for and destroy the target. And, three, there has  
25 to be will.

1           In both cases with our current Minuteman-III,  
2           reliability and survivability is becoming increasingly  
3           difficult to do. If we were to continue with the Minuteman-  
4           III, we would have to replace the missile. There are  
5           attrition problems that we will have with the booster, with  
6           missile guidance in the post-booster vehicle that will  
7           require us to replace the missile.

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

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

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

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

24          Senator Fischer: Thank you, sir.

25          Dr. Soofer, opponents of the modernization program laid

1 out by President Obama, they often criticize it as  
2 propagating Cold War-era thinking, and they point  
3 specifically to his decision to retain the triad as evidence  
4 of this.

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

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

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

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

24 We have at least three fundamental roles for nuclear  
25 weapons that have endured since the days of the Cold War and

1 the post-Cold War period, and that is to deter nuclear  
2 attack, to help deter large-scale aggression, and to assure  
3 our allies. And to do that, we have relied on a triad of  
4 forces to provide the flexibility to do that and also to  
5 ensure survivability against potential changes in the  
6 geopolitical environment or technology, or the adversary  
7 being able to, say, be able to take out one leg of the triad  
8 or two legs of the triad. If you have three legs, it  
9 becomes much more difficult for them to even imagine  
10 launching a first strike against U.S. forces.

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

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

19 Just to begin with, Russia becoming a great power  
20 adversary. The other conclusion that we are quickly coming  
21 to is that, despite the fact that Republican and Democratic  
22 Presidents since the end of the Cold War have been trying to  
23 reduce reliance on nuclear weapons, other countries are  
24 going in the other direction. Russia, China, North Korea,  
25 other countries are increasing reliance on nuclear weapons.

1 So we have to take that into account in the way we evaluate  
2 our future nuclear requirements.

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

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

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

17 Senator Fischer: Thank you.

18 Senator Donnelly?

19 Senator Donnelly: Thank you, Madam Chair.

20 I want to start by addressing an issue that I think is  
21 too often overlooked and may be reaching a critical point as  
22 we move forward with our nuclear modernization efforts.  
23 That would be the availability of affordable U.S.-  
24 manufactured, high-reliability, radiation-hardened  
25 microelectronics. This industry has increasingly moved

1 offshore, and we are coming to a point where that may pose a  
2 real problem for the department.

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

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

13 Admiral Benedict: Thank you, sir.

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

23 We did that, and then we went to a life of type buy in  
24 the shortest period that we could fiscally afford within the  
25 program, in order to optimize the infrastructure that

1 existed today. We drew extensively from the experience and  
2 expertise and talent pool that exists at Crane, as part of  
3 the Naval Surface Warfare Center, to optimize that.

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

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

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

18 Mr. MacStravic: So --

19 Senator Donnelly: Okay, is there more?

20 Mr. MacStravic: There is more. So, sir, you are  
21 talking about a systemic problem. Access to secure,  
22 trusted, and radiation-hardened microelectronics is a  
23 critical requirement for both the Department of Defense and  
24 the Department of Energy. The fiscal year 2018 President's  
25 budget has a down payment on making sure that the Nation has

1 an assure supply of advanced electronics, fostering a next  
2 generation of both strategic and nonstrategic weapons.

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

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

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

24 Mr. Soofer, Mr. MacStravic, what are your views on  
25 this, on the more commonality, the more opportunities as we

1 coordinate our acquisition strategy, the more chance we have  
2 to sustain these capabilities?

3 Dr. Soofer?

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

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

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

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

16 Senator Donnelly: Sure.

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

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

24 Once the Air Force has received the proposals and made  
25 an award, my office will be conducting, and conducts

1 annually, a critical industrial base assessment, to  
2 determine whether or not the design -- and remember, all we  
3 are rewarding with GBSD is a design -- is going to cause  
4 additional stress or additional opportunities for critical  
5 suppliers at the second and third tier, which is where these  
6 components would be performed.

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

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

14         I understand you are planning a longer life for the B-  
15 52, perhaps out to 2050. What is your view on the need to  
16 modernize the engines, if we are going to do that?

17         General Rand: Thank you, Senator.

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

23         That would reduce significantly our requirement for  
24 tankers, and they could be used by other airplanes that  
25 needed the tankers. Also, if we reused the engines today,

1 typically have a lifespan of 40, 50 years where you can  
2 mount them and not take them off the wing again. That would  
3 reduce our manpower requirements that we spend quite a bit  
4 of time in the sustainment of the engines. As faithful as  
5 the TF33 engine has been, it takes a lot of people and a lot  
6 of maintenance to keep it airworthy.

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

10 Senator Donnelly: Thank you.

11 Thank you, Madam Chair.

12 Senator Fischer: Senator Peters?

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

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

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

21 My understanding is that the environmental impact  
22 statement is very far along in the process, if it has not  
23 already been completed, which it may have, and it was due to  
24 be released last year, actually. However, Deputy Secretary  
25 Work informed the Armed Services Committee that because the

1 topic of a potential future interceptor site will be  
2 addressed in the review, the department will hold off on  
3 making a designation of a preferred site for a continental  
4 U.S. interceptor site.

5 As you know, the EIS was required in the fiscal year  
6 2013 NDAA, so if a decision is made to move forward with the  
7 interceptor site, the initial environmental review is  
8 already complete. I believe the findings of that EIS would  
9 be very helpful and very useful in informing the review  
10 about the potential cost of environmental mitigation on  
11 those sites.

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

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

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

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

24 Senator Peters: I would appreciate that, if you could  
25 do that. And I appreciate that it is going to be considered

1 in the overall review in the assessment.

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

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

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

15 Dr. Soofer: Exactly right.

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

20 Dr. Soofer: Yes, sir.

21 Senator Peters: I am also very concerned about the  
22 Russian deployment of an intermediate-range, nuclear-capable  
23 missile that is clearly in violation of the INF Treaty. And  
24 my question to you as well, Dr. Soofer, is, what concrete  
25 steps has the administration taken so far to react or to

1 deal with this violation of the treaty? And do you believe  
2 that they are sufficient to deny Russia a military advantage  
3 that they gained from the deployment of these intermediate-  
4 range missiles?

5 Dr. Soofer: Thank you, Senator.

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

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

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

17 What does it mean? Why is Russia doing this? So, for  
18 instance, we know that Russia already has air-launch cruise  
19 missiles and sea-launch cruise missiles that can range  
20 similar targets in Europe. So the question is, why go  
21 forward? What is the military capability that Moscow  
22 derives from this? And we come to the conclusion that there  
23 must be some military capability that outweighs the  
24 political repercussions of actually violating the INF  
25 Treaty.

1           So for Russia, this has a meaningful military  
2 capability, and we need to assess what that is and how to  
3 address it.

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

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

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

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

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

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

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

19          Dr. Soofer: Yes, sir.

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

25          I guess that leads to my final point and my concern

1 with how NATO allies, in particular, see the United States.  
2 Certainly, Secretary Mattis has been very clear, I think, in  
3 U.S. support of our NATO allies. He has also been very  
4 clear that we need to have strong allies, that you cannot be  
5 a power without having a lot of good friends around you as  
6 well.

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

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

19 Dr. Soofer: Absolutely, Senator. As I pointed out,  
20 the fundamental roles for nuclear weapons are to deter our  
21 adversaries and assure our allies. And U.S. nuclear  
22 capabilities, dual-use capabilities in Europe, are a  
23 fundamental element of our extended deterrent that reassures  
24 our allies, and we will continue to do so. And the  
25 Secretary of Defense has made that clear.

1 Senator Peters: Thank you so much. I appreciate it.

2 Thank you, Madam Chair.

3 Senator Fischer: Thank you, Senator.

4 Senator Sullivan?

5 Senator Sullivan: Thank you, Madam Chair.

6 Gentlemen, thank you for your testimony here.

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

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

22 I also want to talk about missile defense.

23 Dr. Soofer, I am glad that you are there. I know your  
24 background. I know how much experience you have on the  
25 issue. You may have seen, 2 weeks ago, a number of us,

1 including Senator Peters and I, introduced a comprehensive  
2 Advancing America's Missile Defense Act.

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

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

18 Dr. Soofer: Senator, thank you.

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

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

25 Dr. Soofer: Exactly.

1           Senator Sullivan: So all they are missing is the  
2 reentry vehicle for a nuke, in terms of the capability?

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

7           Senator Sullivan: That is another troubling  
8 development.

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

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

18           Senator Sullivan: Our goal is to make sure that, you  
19 know, the Members of the Senate who are on the bill that we  
20 introduced 2 weeks ago, is to make sure that, whoever is in  
21 the White House, has the kind of strategic time that, if and  
22 when he has this capability, we can announce to North Korea,  
23 look, you try to shoot one or two or three. You know, you  
24 want to go out in a blaze of glory? We will shoot that  
25 down. We have the 99 percent capability.

1 I know we do not want to get into numbers. Do we have  
2 the 99 percent capability right now to shoot down a rogue  
3 missile from North Korea? If you do not feel comfortable  
4 answering in this setting, you do not need to.

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

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

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

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

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

24 Dr. Soofer: Senator, I do support those, personally.  
25 And I think it is based on an approach that was outlined by

1 the previous administration. It enjoys support here in the  
2 Congress. And I think it makes eminent sense.

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

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

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

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

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

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

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

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

25 But protecting our homeland in a way that integrates

1 the usefulness and the knowledge we have from our allies,  
2 for example, the Israelis, as you know, in the NDAA every  
3 year, we have been very supportive of Iron Dome. But in  
4 some ways, they have technology and they have advanced in  
5 ways that could probably help us.

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

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

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

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

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

23 Dr. Soofer: Thank you.

24 Senator Sullivan: Thank you.

25 Senator Fischer: Thank you, Senator.

1 Senator Warren?

2 Senator Warren: Thank you, Madam Chair.

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

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

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

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

24 So the first thing we did is we started this journey a  
25 little over 2 years ago of, what is NC3? We have identified

1 in a very thorough way the systems. Then we analyzed the  
2 health of each of those systems, and that is ongoing. Some  
3 of them are obsolete. They need to be replaced. Some need  
4 to be upgraded.

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

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

22 These are some very meaningful things. We are  
23 standardizing across our command posts in our operations  
24 centers the ground-based terminals and radios for us to use.  
25 It is called Global Ascent.

1           So there are many things that we are moving out on and  
2 making improvements on. So we are in a far better place  
3 than we were. I will assure you this has the top-level  
4 attention in the Department of Defense.

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

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

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

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

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

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

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

25          Senator Warren: Yes.

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

4           Senator Warren: Okay. All right.

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

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

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

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

19           General Rand: Yes, ma'am.

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

23           General Rand: Thank you for that. I am in very close  
24 cahoots with my dear friend Ellen Pawlikowski, who is the  
25 Commander of Air Force Materiel Command.

1           Yesterday, at our council meeting, two issues came up,  
2           the funding for the FAB-T FET it is called, that Force  
3           Element Terminal, and for the programs that we have, many of  
4           the programs, is to make sure that we have the people who  
5           can manage those programs from cradle to grave. And we are  
6           going to the Air Force to discuss now how we can get the  
7           manning where those gaps exist.

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

12          Senator Warren: 235.

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

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

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

24          I am out of time now, but I am going to send some  
25          questions for the record to Mr. MacStravic just about your

1 role in helping out on this.

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

5 General Rand: Thank you very much.

6 Senator Warren: It is important.

7 General Rand: I appreciate your support.

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

9 Thank you, Madam Chair.

10 Senator Fischer: Thank you.

11 Senator Cotton?

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

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

21 General Rand: Sir, we need to develop emerging  
22 technologies. That is why I am a huge proponent for GBSD.

23 Before you came in, I had mentioned that there are two  
24 aspects to deterrence: reliability, which we own, and the  
25 weapon survivability, which the enemy gets a vote in. And

1 we need to do some things that we will not be able to do  
2 with existing systems to ensure that the weapon will get to  
3 its intended target with the intended effect that we have.

4 That is the essence of why we need GBSD. So what we  
5 need to do is to pursue this acquisition strategy and stay  
6 true to course and field this capability by the time we  
7 need, which is 2030. Because that is when I see this big  
8 closure of the technology gap that we have had the benefit  
9 of having for many decades that is getting smaller and  
10 smaller. And if we do not do something, that gap will  
11 close.

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

15 General Rand: Yes, sir. We are on track. Right now,  
16 we are going to down select to two companies to go for GBSD  
17 this summer to go into the TMRR, the Technological Maturity  
18 Risk Reduction. This is the process.

19 In 3 years, then we will down select to the company.  
20 We are on track with the strategy.

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

25 Senator Cotton: So the specifics that would ensure our

1 reentry vehicles are survivable in the GBSD world as  
2 compared to today's world you would like to discuss in a  
3 classified setting.

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

5 Senator Cotton: I understand.

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

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

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

25 So could you please elaborate on how you can reduce on-

1 alert missile field crews without reducing missile field  
2 resiliency?

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

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

13 Senator Cotton: Thank you.

14 Dr. Soofer, congratulations on your new position.

15 Dr. Soofer: Thank you.

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

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

24 Obviously, one trend in space today is multi-mission  
25 platforms. How would that trend in satellite technology

1 affect our doctrine as it relates to any effort to disable  
2 or destroy American satellites?

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

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

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

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

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

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

1 Posture Review.

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

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

17 Thank you.

18 Senator Fischer: Thank you, Senator Cotton.

19 Senator Heinrich?

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

25 I want to start with General Rand and Admiral Benedict.

1           Like Senator Donnelly, I continue to be very interested  
2 in the ensured supply of domestic, trusted microelectronics.  
3 The Air Force and the Navy are pursuing separate  
4 refurbishments of fusing systems for the W88 and the W87,  
5 which includes partnering with Sandia National Labs.  
6 Sandia's portion of the work for Navy and Air Force includes  
7 designing, qualifying, and manufacturing critical strategic  
8 radiation-hard microsystems for both of those, the 88 and  
9 the 87.

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

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

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

22           We have made accommodations within our reentry body, as  
23 has the Air Force, in order to develop sort of a tiered  
24 approach. So there are components within that device that  
25 are absolutely common and will be utilized exactly in the

1 Air Force program. There are components in there that are  
2 adaptable based on the fact that our reentry body flies on a  
3 Trident. Their reentry body will fly on a Minuteman or a  
4 GBSD. Then there are unique based on the two missiles.

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

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

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

19 Admiral Benedict: Yes, sir. I believe that within the  
20 Navy and the Air Force, there are four unique, specific  
21 technologies that, if the United States Navy or the United  
22 States Air Force is not in design, development, or  
23 production, then industry, in and of themselves, will be  
24 incapable or have no economic incentive to sustain, one of  
25 them being solid rocket motors at the strategic grade, at

1 both the Navy and the Air Force. The other one is  
2 radiation-hardened electronics to the levels that we need,  
3 which are far above sun radiation. The other one is reentry  
4 body materials, and the specific unique aspects of those.  
5 Then the fourth one is our guidance requirements for both  
6 ICBMs and SLBMs.

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

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

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

23       Senator Heinrich: General?

24       General Rand: I do not have anything to add. I agree  
25 with Admiral Benedict completely on that.

1 Senator Heinrich: It sounds like we need a MESA 2.0.

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

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

8 General Rand: Yes, sir. Thank you.

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

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

14 Senator Heinrich: Great.

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

19 But it made sense, if I may, because if Air Force  
20 Global Strike is designated the lead command for all things  
21 nuclear in the United States Air Force, there is so much at  
22 Kirtland. It made all the sense in the world to include the  
23 Underground Munitions Maintenance and Storage Complex,  
24 Sandia labs, the Nuclear Weapons Center, the Safety Center,  
25 all the things that we do.

1           So this has just been an outstanding opportunity for us  
2 to kind of share best practices on all the things that we  
3 do.

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

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

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

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

22          And I will defer to you.

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

24          Admiral Benedict: Sir, if I may, we have completed our  
25 conversion on the New START Treaty on 13 of the 14 boats.

1 The remaining boat will be done next month. It has departed  
2 the shipyard, so it just has been one of access. So we will  
3 complete next month, well in advance of General Rand's  
4 acknowledgment of the February 2018 requirement.

5 Senator Heinrich: Great.

6 Dr. Soofer?

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

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

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

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

1 Senator Fischer: Thank you, Senator.

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

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

9 Could you elaborate on that, please?

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

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

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

1 to meet requirements.

2 Senator Fischer: But it is a good lesson.

3 General Rand: It is a very good lesson.

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

10 Senator Fischer: Thank you, sir.

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

16 Admiral Benedict: Yes, ma'am.

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

24 What that will entail is about 300 design engineers  
25 moving from Sunnyvale, California, to Denver, and about 350

1 individuals that do operational support in the program  
2 office moving down to the Space Coast of Florida.

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

7 If you go to Sunnyvale, California, where Lockheed is,  
8 at one time, it was a sprawling campus. It is now literally  
9 a much smaller campus surrounded by Google, Facebook, Yahoo,  
10 Juniper. You can go on and on and on. And the ability to  
11 attract talent at a rate that I can afford, both I and  
12 Lockheed recognized, was not a sustainable program until  
13 2084.

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

20 Senator Fischer: Thank you.

21 You and I have had discussions about the Columbia-class  
22 submarine and the production schedule that we are looking at  
23 there, that there really is no margin for delays in that  
24 schedule if we are going to have them on watch in 2031.  
25 That is only 14 years from now. This is DOD's second-

1 largest acquisition program, so I certainly hope nothing  
2 goes wrong as we are moving forward.

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

8 Admiral Benedict: Yes, ma'am.

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

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

16 We authorized the development and formulation of what  
17 we call the Strategic Weapons Systems Ashore facility down  
18 in Space Coast Florida at the Naval Ordnance Test Unit.  
19 That facility is up. And half of this facility is  
20 certified. The other half is on track to be certified.

21 What that will allow us to do is prove all the  
22 shipyard-integrated test programs, which will expedite the  
23 acceptance of the platforms as they move through not only  
24 Electric Boat but also the U.K. shipyard over in Barrow-in-  
25 Furness in the United Kingdom.

1           So that is a major risk reduction. The other major  
2 risk reduction is the facility that we built at China Lake,  
3 California, at the Naval Air Warfare Center. That is where  
4 we will certify the ability to get back into production of  
5 our launch tubes.

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

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

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

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

1 2031.

2 Yes, ma'am.

3 Senator Fischer: Thank you, sir.

4 Senator Donnelly?

5 Senator Donnelly: Thank you, Madam Chair.

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

10 Dr. Soofer: Thank you, Senator.

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

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

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

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

1           Senator Donnelly: Okay.

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

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

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

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

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

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

1 of things. What are the things that keep you concerned?

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

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

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

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

24 So that is what keeps me up. Then, of course, the  
25 other thing is the work force. There is no work force that

1 built the last launch tube. We have to create a work force.

2 Senator Donnelly: Let me ask you one more.

3 Admiral Benedict: Yes, sir.

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

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

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

18 Senator Donnelly: For Lockheed Martin, too?

19 Admiral Benedict: Yes, sir.

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

25 Senator Donnelly: Has Lockheed looked at other options

1 than the Space Coast and Colorado?

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

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

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

15 Senator Donnelly: Thank you, Madam Chair.

16 Senator Fischer: Thank you, Senator Donnelly.

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

19 We are having a lot of fun here today. So thank you.

20 General Rand, I just want to point out something in  
21 your written testimony that you said. "I cannot  
22 overemphasize this point: B-21 and B-52 without LRSO  
23 greatly reduces our ability to hold adversaries at risk,  
24 increases risk to our aircraft and aircrew, and negatively  
25 impacts our ability to execute the mission."

1           Would you like to comment on that?

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

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

6           General Rand:  Absolutely.

7           Senator Fischer:  Thank you, sir.

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

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

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

18           Senator Fischer:  Thank you, sir.

19           Senator Donnelly, do you have anything to add?

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

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

25           If you do receive written questions from any members, I

1 would ask that you answer those and return them promptly.

2 [The information referred to follows:]

3 [SUBCOMMITTEE INSERT]

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1 Senator Fischer: Thank you again for your attendance.

2 We are adjourned.

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

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