

Stenographic Transcript  
Before the

Subcommittee on Strategic Forces

COMMITTEE ON  
ARMED SERVICES

## **UNITED STATES SENATE**

HEARING TO RECEIVE TESTIMONY ON MISSILE DEFENSE  
STRATEGY, POLICIES, AND PROGRAMS IN REVIEW OF THE  
DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2022  
AND THE FUTURE YEARS DEFENSE PROGRAM

Wednesday, June 9, 2021

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1 HEARING TO RECEIVE TESTIMONY ON MISSILE DEFENSE STRATEGY,  
2 POLICIES, AND PROGRAMS IN REVIEW OF THD DEFENSE  
3 AUTHORIZATION REQUEST FOR FISCAL YEAR 2022 AND THE FUTURE  
4 YEARS DEFENSE PROGRAM

5  
6 Wednesday, May 26, 2021

7  
8 U.S. Senate

9 Subcommittee on Strategic

10 Forces

11 Committee on Armed Services

12 Washington, D.C.

13  
14 The committee met, pursuant to notice, at 4:30 p.m. in  
15 Room SR-232A, Russell Senate Office Building, Hon. Angus  
16 King, chairman of the subcommittee, presiding.

17 Subcommittee Members Present: King [presiding], Rosen,  
18 Kelly, Fischer, Rounds, Cramer, and Tuberville.

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

3           Senator King: This is a hearing on missile defense  
4 strategy, policies, and programs in review of the Defense  
5 Authorization Act Request for fiscal year 2022 and the  
6 Future Years Defense Program. First let me thank our  
7 witnesses, we have two panels, for appearing at today's  
8 hearing.

9           Unlike prior missile defense hearings, we have decided  
10 to add a nongovernmental witness panel to obtain a diversity  
11 of viewpoints on the subject matter before us. The second  
12 panel will be our government witnesses to help explain the  
13 fiscal year 2022 budget request and answer questions that  
14 may arise in the first panel.

15           The defense of our homeland and our allies from  
16 missiles is a technologically complicated and geographically  
17 unbounded problem. Today most missiles follow a predictable  
18 ballistic trajectory, based on the laws of physics, and  
19 those laws have not changed since the of Sir Isaac Newton.  
20 They can fly tens of kilometers, as the recent conflict with  
21 Israel demonstrated, or thousands of kilometers, with an  
22 ICBM moving at about Mach 5.

23           We have spent hundreds of billions of dollars fielding  
24 systems to intercept them, premised on this predictable  
25 trajectory, and with relatively good success. However, a

1 new class of missiles, called hypersonic boost glide  
2 missiles, are now being fielded with fields in excess of  
3 Mach 20, and with an unpredictable, non-ballistic  
4 trajectory. We have not fully fielded systems to track much  
5 less intercept them. These missiles bring back issues of  
6 technology and strategic stability that were once at the  
7 forefront of the debates in ballistic missile defense  
8 decades ago. I hope today's hearing can address the policy  
9 implications of this new class of missiles as well as the  
10 advances we are making in intercepting ballistic missiles  
11 that we have invested so heavily in.

12         Again, let me thank all of you for appearing today.  
13 After Senator Fischer's opening statement each witness will  
14 have 5 minutes for their own opening statements, and then we  
15 will alternate with members for 5-minute rounds of  
16 questions.

17         Senator Fischer.

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

3           Senator Fischer: Thank you, Mr. Chairman, and welcome  
4 to our witnesses. We look forward to hearing your views on  
5 the broader missile defense policy, particularly as we hear  
6 renewed calls for limitations on U.S. missile defense to be  
7 discussed in negotiations with Russia.

8           General VanHerck and General Karbler, I also want to  
9 express my gratitude to the men and women under your  
10 commands who have made some extraordinary sacrifices over  
11 the past year in order to perform their mission and defend  
12 this nation. We are grateful for their service.

13           With respect to the fiscal year 2022 funding request, I  
14 am pleased to see its support for programs like the next-  
15 generation interceptor as well as space-based sensors and  
16 hypersonic defense. However, I remain concerned about the  
17 overall level of funding for missile defense proposed in  
18 this year's budget. Despite continued testimony and  
19 numerous classified briefings for members, where we hear  
20 that threats are growing and becoming more complex,  
21 particularly as adversaries increase their development of  
22 highly capable hypersonic and cruise missile systems, this  
23 budget proposes to fund the Missile Defense Agency at what  
24 would be the lowest level since 2016.

25           I understand that these are part of the hard choices

1 being made across the entire defense budget, and the result  
2 of adopting the top line that ultimately reduces spending on  
3 defense. Nevertheless, I am concerned that this level of  
4 funding, especially if sustained into the future, will be  
5 insufficient to pace the growing threats facing our nation,  
6 and we will be left in a precarious situation as a nation.

7 We rely on the candid testimony of our witnesses to  
8 help us understand the difference between a lean diet and  
9 starvation.

10 Thank you, Mr. Chairman.

11 Senator King: Thank you, Senator Fischer.

12 Dr. Soofer, would you make your opening statement,  
13 please.

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1           STATEMENT OF DR. ROBERT M. SOOFER, FORMER DEPUTY  
2 ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR AND MISSILE  
3 DEFENSE POLICY

4           Mr. Soofer: Thank you, Chairman King and Ranking  
5 Member Fischer. Thank you for the opportunity to appear  
6 before the subcommittee.

7           For most of the post-Cold War period we have enjoyed a  
8 relatively stable, bipartisan consensus on the role of  
9 missile defense in U.S. national security policy, but that  
10 was not always the case. Few national security issues  
11 provoked more debate during the Cold War than missile  
12 defense. The argument hinged on how one perceived the  
13 relationship between missile defense and strategic  
14 stability. One school of thought held that preserving  
15 mutual vulnerability by limiting missile defenses was the  
16 key to stability during a crisis and central for avoiding an  
17 action-reaction arms race.

18           The other school of thought, equally strongly held,  
19 argued that protection against nuclear missile attack was  
20 not only a moral imperative but that even imperfect defenses  
21 could contribute to deterrence of nuclear attack by  
22 complicating an adversary's prospect of launching a  
23 successful disarming first strike. But with the collapse of  
24 the Soviet Union, U.S. missile defense policy shifted from  
25 building defenses against near-peer powers to addressing the

1 emerging threat to the homeland posed by smaller, more  
2 unpredictable regional actors, the so-called rogue states.

3 With a return to great power competition, U.S. missile  
4 defense policy must also cope with China and Russia's  
5 growing regional missile defense capabilities, meant to  
6 prevent the United States from reinforcing its allies during  
7 a conflict. So by centering on regional missile defense and  
8 homeland protection against rogue regimes rather than  
9 Russia, policymakers have been able to avoid those bitter  
10 Cold War debates about strategic stability.

11 So today, if I may, I would like to address three  
12 issues that seem to be attracting attention in the missile  
13 defense policy world. One is continued funding for the  
14 next-generation interceptor, and homeland defense, more  
15 generally. Second is employing the SM-3 missile in support  
16 of homeland defense. And third, the relationship between  
17 arms control and missile defense.

18 So to stay ahead of the North Korean ballistic missile  
19 threat to the homeland, the Obama administration added 14  
20 ground-based interceptors to the 30 fielded by the Bush  
21 administration. And they sought to enhance the ground-based  
22 nuclear defense system through a redesigned kill vehicle,  
23 RKV. The Trump administration altered that acquisition  
24 approach to include a fully modernized interceptor, both the  
25 rocket and the kill vehicle, and plan to add an additional

1 20 GBIs, to bring the total to 64. It appears the Biden  
2 administration has approved the NGI development to proceed.

3 So some national security experts criticize the cost,  
4 the efficacy, and even the necessity for NGI, and GMD more  
5 broadly. I would like to offer the following points in  
6 response.

7 First of all, while we believe North Korea intends to  
8 grow its ICBM force in the coming years, intelligence  
9 agencies cannot know with certainty the pace of that growth.  
10 Today it is reasonable to assume that an additional 20 GBIs,  
11 combined with a nuclear vehicle and improved reliability of  
12 a GMD system may be sufficient to stay ahead of the threat.  
13 We also hope to eliminate a number of North Korean ICBMs on  
14 the ground, easing the burden on the GBIs.

15 Second, with respect to costs, we need to understand  
16 this in context. Combined NGI and GMD funding will account  
17 for about 1/2 of 1 percent of the DoD budget from FY 2021 to  
18 FY 2026. These are not unreasonable sums to protect a  
19 nation against North Korea.

20 Third, proceeding with NGI, and homeland defense more  
21 broadly, is important for U.S. grand strategy. Modernizing  
22 and expanding our homeland defense underpins President  
23 Biden's push to revitalize our ties with allies and friends.  
24 An important element of reviewing alliances is convincing  
25 allies that the United States is prepared to run risks on

1 their behalf. Strengthening U.S. homeland defenses provides  
2 that confidence by reducing our own vulnerability to North  
3 Korean reprisals. After all, why would our allies expect us  
4 to come to their defense if we are not first willing to  
5 provide for our own defense?

6 Finally, Russia and China, they are going to complain  
7 about NGI, despite the fact that they are modernizing their  
8 own suite of missile defense systems. They deploy more  
9 homeland defense interceptors than we do, 68 nuclear-tipped  
10 missiles, and they are modernizing hundreds of regional air  
11 and missile defense systems, a missile defense posture which  
12 exceeds the U.S., in some respects.

13 My second issue is the SM-3 missile. As you know, the  
14 SM-3 missile is a regional missile, based on ships. When we  
15 did the Missile Defense Review in the Trump administration  
16 we asked the question, could we use the SM-3 to provide an  
17 additional layer of protection for the homeland, in addition  
18 to the GBI? In fact, Congress was thinking along the same  
19 lines, because it directed, in the FY 2018 NDAA, that we  
20 conduct a test of the SM-3 missile against a simple ICBM  
21 target. That test took place last November, resulting in a  
22 successful intercept.

23 Now while the SM-3 IIA missile deployed on Aegis ships  
24 will continue to play an important regional defense role,  
25 the Interceptor may provide a modest additional measure of

1 protection for the homeland against North Korean ICBMs in an  
2 emergency or during a crisis. The ship would have to be in  
3 the right place, near our coast, and the right time, and  
4 given its smaller size, compared to the GBI, the Interceptor  
5 would not provide coverage of the entire United States.  
6 Moreover, the SM-3 would not be capable against the more  
7 complex Russian and Chinese threats, armed with penetration  
8 aids and decoys, nor would it be able to cope with Russia's  
9 nuclear air and sea launch cruise missile that can also  
10 range the U.S. homeland.

11 For these reasons, it is unlikely this capability will  
12 upset strategic stability for the foreseeable future, if  
13 ever. And as President Putin himself has noted, by the end  
14 of this year, 90 percent of Russia's nuclear forces will be  
15 modernized, and, in his words, "capable of confidently  
16 overcoming existing and even projected missile defense  
17 systems."

18 Now some have argued that Russia's new novel systems  
19 are a response to our missile defense plans. Well, there is  
20 an alternative explanation for why Russia is developing  
21 these new novel nuclear capabilities. According to Rose  
22 Gottenmoeller, Obama's former New Start chief negotiator, she  
23 said Putin is "after nuclear weapons for another reason, to  
24 show that Russia is still a great power to be reckoned with.  
25 These exotic systems have more of a political function than a

1 strategic or security one." In my view, it is more likely  
2 an improved SM-3 missile, even in limited numbers, will  
3 contribute to collective efforts to meet the challenges  
4 posed by the North Korean regime, thereby enhancing regional  
5 and international strategic stability.

6 In a final analysis, we cannot allow Russia or China to  
7 have a veto over the protection of the United States against  
8 rogue state threats.

9 Finally, on arms control. There is a suggestion that  
10 you cannot have both missile defense and arms control, and I  
11 think history suggests the opposite. The United States has  
12 been pursuing missile defense seriously since the mid 1980s.  
13 This was the Reagan Strategic Defense Initiative, and since  
14 we withdrew from the ABM treaty in 2002. So despite the  
15 fact that we have been pursuing missile defenses, Russia and  
16 the United States have signed three arms control treaties  
17 that have together drawn down nuclear forces by some 85  
18 percent, compared to Cold War highs.

19 Look, if Russian leaders were seriously alarmed about  
20 U.S. missile defenses, they would not have agreed to these  
21 reductions, or more recently to extend the New START Treaty  
22 for another 5 years.

23 To conclude, I would just add that homeland and  
24 regional missile defenses provide protection for the nation,  
25 its deployed forces and allies, and are critical enablers of

1 a U.S. grand strategy that relies on alliances to maintain a  
2 favorable balance of power and a peaceful world order. For  
3 about 2 percent of annual defense appropriations, missile  
4 defense provides the United States the freedom of action to  
5 respond to crises, to shore up allies, to deter adversaries,  
6 and, if necessary, to defeat them and limit damage should  
7 deterrence fail.

8 And finally, deterrence, to be successful, requires the  
9 demonstration of resolve. Missile defense is a very  
10 tangible measure of U.S. resolve. Failure to do what is  
11 necessary to protect this nation against North Korea, a  
12 country with one of the lowest-ranked economies in this  
13 world, could call into question U.S. resolve and commitment  
14 in the eyes of ally and adversary alike. This would damage  
15 U.S. strategic capability and have serious implications for  
16 America's broader foreign policy objectives.

17 Thank you.

18 [The prepared statement of Mr. Soofer follows:]  
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1           Senator King: Thank you. In the interest of time we  
2 are going to submit the backgrounds of Dr. Soofer and Mr.  
3 Panda for the record.

4           Mr. Ankit Panda, please.

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1           STATEMENT OF ANKIT PANDA, STANTON SENIOR FELLOW,  
2 NUCLEAR POLICY PROGRAM, CARNEGIE ENDOWMENT FOR INTERNATIONAL  
3 PEACE

4           Mr. Panda: Thank you, Chairman King, Ranking Member  
5 Fischer, and distinguished members of the subcommittee. I  
6 am honored to be here today before you to offer my views on  
7 the missile defense strategy of the United States and its  
8 relationship to strategic stability with our nuclear-armed  
9 adversaries.

10          My name is Ankit Panda. I am a Washington, D.C.-based  
11 scholar of the Carnegie Endowment for International Peace,  
12 where I study nuclear strategy and missile defense, among  
13 other issues. For the last 20 years we have sought to  
14 develop a national missile defense architecture capable of  
15 defending the homeland against limited missile threats,  
16 namely those from North Korea, which today possesses a  
17 minimally capable, rudimentary, intercontinental range  
18 ballistic missile capability, and Iran, which may one day  
19 possess such a capability.

20          Today our ambitions for national missile defense remain  
21 large. Plans to develop a layered homeland missile defense  
22 architecture, in particular, for a major plank of the  
23 Missile Defense Agency's near-term efforts. This layered  
24 architecture stands to take what was once limited plans for  
25 a modest, self-contained homeland missile defense

1 architecture, captured entirely in the Ground Based  
2 Midcourse Defense system and its 44 deployed Ground-Based  
3 Interceptors, soon to be 64, deployed in Alaska and  
4 California, and extended to include sea-based Aegis missile  
5 defense, and eventually even ground-based Terminal High  
6 Altitude Area Defense systems.

7 Allow me now to posit that this country's national  
8 security could be meaningfully enhance through the tabling  
9 of limitations on strategic or homeland missile defense, as  
10 part of a reciprocal process involving Russia, and possibly  
11 China. Doing so would not only reduce fiscal and  
12 opportunity costs in ways that would augment both our  
13 conventional deterrence capabilities and nuclear  
14 modernization plans, but also promote more stable nuclear  
15 deterrence with our adversaries.

16 The case for limitations rests fundamentally on a  
17 national reckoning with the necessities of nuclear  
18 deterrence. As the last administration's 2019 Missile  
19 Defense Review notes, we rely on nuclear deterrence to cope  
20 with the strategic forces of Russia and China, which are  
21 objectively too vast to be fully absorbed by our existing  
22 missile defenses. That I do not dispute.

23 But Moscow and Beijing reason about our intentions, as  
24 we often do theirs, based on our actions and not our  
25 statements. As a result, both fear the ability of our

1 current and future missile defense posture to degrade their  
2 strategic nuclear retaliatory capability, if not to  
3 completely disrupt it. This, in turn, begets instability.

4 To be clear, I do not posit that our missile defense  
5 programs are the sole drivers of Russian and Chinese  
6 strategic modernization and force expansion. However, they  
7 are salient, and considerable evidence suggests that we are  
8 seeing precisely the kind of action-reaction relationship  
9 between strategic offense and defense that spurred the first  
10 round of U.S.-Soviet arms control during the late 1960s once  
11 again today.

12 As was the case back then, limitations should not be  
13 unilateral but should nonetheless be on the table, in  
14 particular, as we seek a follow-on agreement with Russia to  
15 the 2010 Strategic Arms Reduction Treaty, the last treaty of  
16 its kind to remain in force between our two countries and  
17 due to expire in 2026.

18 Congress, in particular, has led on this issue in the  
19 past and can do so again. For instance, during the final  
20 decade of the Cold War it was Congress that limited the  
21 Reagan administration's desire to reinterpret the ABM treaty  
22 in a way that might permit for a capacious expansion of the  
23 Strategic Defense Initiative. This facilitated strategic  
24 stability and Congress can once again play this role.

25 So there are numerous ways in which Congress might lead

1 on this issue to forestall what I see is a costly 21st  
2 century arms race that is already underway and enhance  
3 American national security in the process.

4 First, Congress should ask the Department of Defense to  
5 study and assess the extent to which our investments in  
6 missile defense are spurring qualitative and quantitative  
7 force structure changes by our adversaries. DoD has  
8 observed, in recent congressional mandated reports, that  
9 missile defense is driving certain forms of Chinese and  
10 Russian modernization, for instance. A fuller study could  
11 inform our national decision-making to ensure a prudent path  
12 forward.

13 Beyond this, Congress should adopt a resolution  
14 acknowledging the action-reaction relationship between  
15 strategic offensive and defensive arms, as the preamble to  
16 the New START Treaty in 2010 did. In doing so, this body  
17 can render more credible attempts by this administration, or  
18 a future administration, to seek limitations on Russian and  
19 Chinese offensive arms of particular concern that would  
20 enhance American national security.

21 Finally, Congress should remain actively involved in  
22 ensuring the Missile Defense Agency is subjecting the  
23 Ground-Based Midcourse Defense system to realistic testing  
24 and evaluation. This can include mandating testing against  
25 ICBM target missiles of longer ranges, that would be more

1 representative of, say, a North Korean ICBM. Future testing  
2 should also include more realistic environmental and other  
3 stressors, including decoys designed to emulate the infrared  
4 signature of a target re-entry vehicle, something that is  
5 eminently within North Korea's reach today.

6 My written testimony for this subcommittee discusses  
7 these and other issues germane to today's hearing in greater  
8 detail. Thank you for this opportunity today, and I look  
9 forward to your questions.

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

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1 Senator King: Thank you both.

2 Mr. Soofer, I am trying to understand this. Our  
3 missile defense system is not designed to intercept missiles  
4 from either China or Russia. Is that correct?

5 Mr. Soofer: Yes, sir.

6 Senator King: And so what is our principal defense  
7 against missiles from China and Russia?

8 Mr. Soofer: The same defense that we had during the  
9 Cold War, sir, the nuclear deterrent.

10 Senator King: Deterrent. If that is effective against  
11 China and Russia, why isn't it effective, or wouldn't it be  
12 effective against North Korea or Iran?

13 Mr. Soofer: Right. Well, North Korea, arguably, may  
14 not have the same rational perspective on these issues as  
15 Russia.

16 Senator King: But wouldn't the leader of North Korea  
17 understand that if he attacks this country, his country  
18 would disappear from the map? I mean, that would deter even  
19 the most unstable leader, it would seem to me.

20 Mr. Soofer: Well, the question is who has got more at  
21 stake at this point. The concern is that he would not  
22 believe that we would use nuclear weapons against North  
23 Korea for fear of his reprisal against the United States.  
24 And by having missile defenses, you take away that  
25 consideration.

1           Senator King: Let me change the subject slightly to  
2 the capability of the missiles. The missile defense system  
3 that we are talking about is principally to deal with the  
4 threat of ballistic missiles. Is that correct?

5           Mr. Soofer: Yes, sir.

6           Senator King: And my understanding is that it would  
7 not deal with the threat of hypersonic glide vehicles.  
8 Correct?

9           Mr. Soofer: Well, current they do not, but the Missile  
10 Defense Agency is working on defense against hypersonics,  
11 both against long-range systems and the shorter-range  
12 systems our forces would encounter in regional campaigns.

13          Senator King: So we believe that there will be a  
14 future capability. Is that going to be a capability of the  
15 new missiles that we are talking about authorizing in this  
16 process?

17          Mr. Soofer: I am not completely familiar with the  
18 budget requests at this point, but I do know that the  
19 Missile Defense Agency is working on sensors and an  
20 intercept capability against hypersonic threats. But that  
21 is not what I was referring to in the SM-3 IIA missile. The  
22 SM-3 IIA is a regional missile, a Navy missile, that  
23 intercepts ballistic missiles on the midcourse phase. And  
24 the hope is that we could give it some capability to also  
25 intercept very simple North Korean ICBM missiles that are

1 headed from North Korea to, say, Guam or Hawaii, or even the  
2 continental United States.

3 Senator King: Mr. Panda, you talked about the action-  
4 reaction. There is a finite number of Interceptors. Right  
5 now it is 44, and we are talking about going to 64. Can't  
6 that capability be defeated by North Korea simply by having  
7 more incoming missiles?

8 Mr. Panda: Excellent question, Senator. So I will  
9 just first note that I am the author of a recent book on  
10 North Korean strategic nuclear forces, and I spend more time  
11 than I would like looking at pictures of North Korean  
12 missiles.

13 As far as I know, North Korea today has 10 ICBM  
14 launchers. As far as I am also aware, based on open  
15 sources, MDA's concept of operations for GMD relies on using  
16 four Interceptors per incoming target re-entry vehicle, soon  
17 to become three, but currently four, I believe.

18 So if we just do the math, North Korea would need to  
19 add a single additional ICBM launcher to potentially  
20 saturate GMD, and based on GMD's testing record, the single-  
21 shot probability of kill, which is the probability that a  
22 single GMD system shot at an incoming North Korean re-entry  
23 vehicle would succeed, based on open sources again, that  
24 number appears to be just a little over 50 percent.

25 So based on that assessment, Senator, I would say that

1 North Korea can probably today bet on delivering a  
2 thermonuclear warhead to the continental United States, and  
3 I believe that that is entirely the reason that Kim Jong-un  
4 today feels that he has a nuclear deterrent. He declared,  
5 in November 2017, that his nuclear deterrent was complete,  
6 before turning to negotiations with the United States.

7 So I do think that that would be a correct assessment.

8 Senator King: But this is exactly what you are talking  
9 about, is as you build up your missile defense then your  
10 adversary is incited to build up their side of the  
11 offensive capability. Is that your position?

12 Mr. Panda: That is correct. North Korea, of course,  
13 is quite resource constrained, Senator, so if we were to go  
14 to 64 GBIs I cannot predict today whether Kim Jong-un would  
15 have the resources or the wherewithal to keep building ICBM  
16 launchers and ICBMs to cope with that. I will, however,  
17 point out that qualitative modernization is also underway in  
18 North Korea. In October 2020, North Korea demonstrated a  
19 missile, the largest road-mobile missile anywhere in the  
20 world today, because most countries do not deploy road-  
21 mobile liquid propellant missiles like North Korea does.  
22 But the missile that they demonstrated appears to be large  
23 enough to carry multiple re-entry vehicles. North Korea is  
24 also working on countermeasures, which will include  
25 sophisticated and unsophisticated decoys.

1           And so I completely think that even North Korea can  
2 certainly cope with qualitative advancements to our own  
3 missile defense.

4           Senator King: Mr. Soofer, I am out of time, but I  
5 think you wanted to respond?

6           Mr. Soofer: Right. You know, we do not just try to  
7 deal with North Korea and ICBMs with active missile defense.  
8 It is a combination of deterrence, as you suggest, as well  
9 as attack operations. We are going to try to find as many  
10 of these launchers on the ground as possible and take them  
11 out before they launch. And then there is active defense,  
12 right?

13           But the bigger point here is if we were not to compete  
14 with North Korea, if we were not to build missile defenses  
15 against the North Korean threat, what kind of signal is that  
16 going to send to our allies? If we are not willing to  
17 defend ourselves against North Korea, a country that can  
18 barely afford to feed itself, why would our allies think  
19 that we are going to risk our own lives to come to their  
20 defense?

21           Senator King: Senator Fischer.

22           Senator Fischer: Thank you, Mr. Chairman. Dr. Soofer,  
23 I am sure you have seen a recent letter by a number of  
24 advocates to President Biden encouraging him to discuss  
25 limitations on U.S. missile defenses in the upcoming talks

1 with Putin. The letter refers to comments the President  
2 made back in 2001, when as a Senator he opposed the Bush  
3 administration's plans to deploy a national missile defense  
4 system, and predicted it could trigger an arms race with  
5 Russia and China.

6 So let me ask you, did that prediction come true, and  
7 what empirical evidence is there linking missile defense to  
8 an arms race, and more broadly, is there evidence that  
9 missile defense is incompatible with arms control?

10 Mr. Soofer: Thank you, Senator. I do not think that  
11 is what has happened. So exactly what happened. We  
12 withdrew from the ABM Treaty in 2002. Everybody had  
13 anticipated at the time that you had this huge arms race.  
14 Both sides would build more offenses to overcome defenses.  
15 And what did we have? We had the Moscow Treaty, which took  
16 us from 6,000, under START, to 2,200. We went down from  
17 6,000 to 2,200, even though we withdrew from the ABM Treaty.  
18 And then we had the New START Treaty, which took us down to  
19 1,550.

20 What arms race are they talking about? There has been  
21 no arms race. In fact, it is just the opposite. When we  
22 signed the ABM Treaty in 1972, the Russian inventory, the  
23 Soviet inventory, went from about 2,500 warheads to over  
24 10,000 nuclear warheads. It was just the opposite. This  
25 idea of action-reaction, it is too simple. There are many

1 reasons why countries choose not to build nuclear weapons.

2 But clearly our withdrawal from the ABM Treaty, our  
3 deployment of 44 Ground-Based Interceptors, has not spurred  
4 an arms race. The Russians recently agreed to extend the  
5 New START Treaty by 5 years. If they were so alarmed by our  
6 missile defenses and our plans to add 20 more NGIs, why  
7 would they agree to that?

8 Senator Fischer: Dr. Soofer, Russia and China have  
9 been expanding their nuclear arsenals in recent years, but  
10 these actions have come while U.S. missile defense  
11 capabilities have remained relatively unchanged. For  
12 example, the most significant enhancement of our homeland  
13 missile defense system has been the construction of the  
14 radar in Alaska. With the failure of the RKV program, and  
15 our GMD system has not received the upgrades that were  
16 planned for that, and then we have seen the expansion, the  
17 proposed expansion, of the fleet from the 44 Interceptors to  
18 64, which was announced in 2017, it has not taken place.

19 So I think we have demonstrated also that the SM-3 IIA  
20 missile has some capabilities against the ICBMs, but this  
21 demonstration was conducted in December 2020, which is long  
22 after the Russian and the Chinese have undertaken their  
23 nuclear expansions. That is a comment.

24 What is your view of Russia's complaints against U.S.  
25 missile defenses and its attempt to portray its actions,

1 such as a deployment of a variety of new nuclear systems  
2 that were announced by Putin in 2018 as responses to our  
3 nuclear defense programs?

4 Mr. Soofer: Senator, as I quote I read by Rose  
5 Gottemoeller suggests, Russia does this for political  
6 reasons. They have their own domestic political problems.  
7 Putin has to exert his control over the oligarchs, right?  
8 He is more concerned about sowing dissention between the  
9 U.S. and its allies. Missile defense is a prime vehicle for  
10 doing that. And even here in the United States, they  
11 interfere with our debates by suggesting that missile  
12 defense is something that alarms them. But again, the  
13 evidence suggests that despite their talk, they continue to  
14 negotiate with us. They continue to reach reductions.

15 I am not suggesting that we do not talk to Russia about  
16 this. Even the Trump administration, on at least five  
17 occasions, spoke to the Russians about the role of missile  
18 defense and strategic stability. You know, if the Biden  
19 administration wants to pursue that, then I think it is  
20 totally appropriate.

21 Senator Fischer: Does Russia need a nuclear-powered  
22 cruise missile to overwhelm our missile defenses?

23 Mr. Soofer: Clearly no. Clearly not. They have air-  
24 launched cruise missiles, sea-launched cruise missiles. So  
25 no.

1 Senator Fischer: Thank you.

2 Senator King: Senator Kelly.

3 Senator Kelly: Thank you, Mr. Chairman. Mr. Panda,  
4 earlier you were talking about the probability of kill of  
5 our systems. I think you said a PK of 0.5, roughly. So  
6 where does that data come from, if you can say in an open  
7 hearing? And then I wanted to go back to the number of  
8 ICBMs that DPRK, that you believe that they have, and  
9 obviously there are two approaches to this. We can increase  
10 the number of GBIs. Currently I believe we have 44. But  
11 the other approach here could be how do we improve on the PK  
12 number? So can you elaborate a little bit about where we  
13 are on that?

14 Mr. Panda: Absolutely, Senator. So, first of all, I  
15 have never been in government. I have never held a  
16 clearance, so my assessments are entirely based on open  
17 sources. The actual PK number is, I believe, classified.  
18 The assessment that I am offering is primarily based on the  
19 testing history of the system, which allows us to  
20 extrapolate reasonably. Of course, there have been multiple  
21 statements made by officials expressing their confidence in  
22 the system, which I will just point out that that is  
23 different from the technical parameters of GMD's actual  
24 performance.

25 So based on your other observation about the two

1 possible approaches on how we can get our PK up, I will say,  
2 Senator, if we are to sustain missile defenses -- and when I  
3 talk about limitations I am not talking about eradicating  
4 missile defense by any means. I do believe that the ABM  
5 Treaty, for instance, allows for 100 Interceptors at two  
6 fixed sites, per the 1974 protocol to the treaty.

7       What I do want to see if we do continue to invest in  
8 missile defense, that we do it right, that testing and  
9 evaluation are realistic. I will point out that GMD has  
10 been tested against ICBM-class targets that MDA describes  
11 as, quote, "threat representative." But to my knowledge,  
12 the target missiles used in these test are far shorter range  
13 than an actual ICBM that would have to travel from North  
14 Korea's northern provinces, where they base their ICBM  
15 forces, to the U.S. homeland.

16       So I will just emphasize that again, Senator. If we  
17 are to continue to proceed with maintaining a missile  
18 defense, and this is regardless of whether or not we pursue  
19 arms control, our missile defenses should be realistically  
20 tested and evaluated. If we are going to continue to spend  
21 taxpayer money on this enterprise, it needs to be realistic.  
22 It needs to demonstrate a capability that is real. Because  
23 ultimately -- and I believe my co-witness pointed this out  
24 -- missile defense comes into play when strategic deterrence  
25 has failed, and ultimately no one in this room is in favor

1 of allowing the United States to face a nuclear attack.

2 So if nuclear deterrence is here to stay, my  
3 preference, and I am sure the preference of most Americans,  
4 will be that it works as best as it can, and that means that  
5 testing and evaluation need to be done properly and done in  
6 ways that are realistic. Thank you.

7 Senator Kelly: So just to follow up on this. So we  
8 are talking with SM-3 GBIs, we are talking midcourse. If we  
9 start to look into systems that could intercept in a boost  
10 phase, any sense for what kind of probability of kill we  
11 would have with those systems at this point?

12 Mr. Panda: Sure, Senator. That is an excellent  
13 question. Boost-phase defense has been a topic of query for  
14 over 20 years. There have been multiple studies done. The  
15 primary pitfall with boost-phase defense is that we  
16 physically need to base our Interceptors, or whatever launch  
17 vehicle for the Interceptors, be that a drone, a fighter,  
18 near the adversary's territory. And really the only country  
19 with which this would be viable would be North Korea, which  
20 has ocean and international waters on both sides. But  
21 again, this would only come into play in a crisis.  
22 Effectively, it would be simply infeasible to keep an F-35  
23 or a drone or any other kind of launch vehicle in the air  
24 long enough, at all times, to intercept any North Korean  
25 missile launch.

1 Another point that I will point out is that, you know,  
2 we have been talking strategic stability, and you raised  
3 this point with boost-phased defense. There are, of course,  
4 other concepts that we have been looking into --  
5 counterforce targeting of North Korean launchers before they  
6 can launch, left-of-launch techniques, including  
7 cyberattacks.

8 A subcomponent of strategic stability that has not been  
9 surfaced in today's discussion is crisis stability. We have  
10 talked about arms race stability, and that mostly refers to  
11 the peacetime buildups on both sides. Crisis stability  
12 refers to our incentives in a crisis, and for Kim Jong-un,  
13 knowing that the United States is so fundamentally  
14 qualitatively advanced compared to North Korea, the  
15 incentives to use nuclear weapons first in a crisis grow the  
16 more we indicate that we are willing to destroy his missiles  
17 early in a crisis. Kim Jong-un has fundamentally developed  
18 these weapons because he thinks that using them first gives  
19 him the best rational chance at survival in a conflict.

20 And so I think, you know, if I could counsel one thing  
21 it would be that it is fine to pursue missile defense. It  
22 is fine to protect the U.S. homeland from nuclear attacks  
23 from North Korea. But we need to be careful about the kinds  
24 of incentives that we generate for the North Korean  
25 leadership in a crisis. Because my assessment is that

1 fundamentally that Kim Jong-un is rational, but that his  
2 rationality, ultimately, has manifested in a way that favors  
3 the first use of nuclear weapons in a crisis.

4 Senator Kelly: Thank you.

5 Senator King: Senator Cramer.

6 Senator Cramer: Thank you, Mr. Chairman. I just kind  
7 of want to follow up a little bit with that. Given that  
8 theory, would the same thing apply to, say, missile-tracking  
9 satellites, and everything else in the value chain? Do  
10 those have the same impact on possible response?

11 Mr. Panda: Thank you, Senator. Missile tracking can  
12 facilitate counterforce targeting of North Korean assets,  
13 and ultimately, because these assets will be used anywhere  
14 round the world where our forces need them, they can simply  
15 also be used against China and Russia, this has already led  
16 to, for instance, Russia's development of a ground-based  
17 laser, called Peresvet, which is designed to disrupt, dazzle  
18 our observation satellites. The Russians do not want us  
19 tracking their ICBM transporter.

20 We have not talked a lot about China today, so let me  
21 just offer one observation there. The primary Chinese  
22 concern is not solely our missile defense. China is also  
23 quite concerned about our conventional precision strike  
24 capabilities. Because Chinese nuclear forces are lean, I  
25 believe the Defense Intelligence Agency has attested to the

1 fact that Chinese nuclear forces are currently in the low  
2 200s but expected to double in size by the end of the  
3 decade.

4 One of the things that China is particularly concerned  
5 about is a conventional campaign, waged by the United  
6 States against its nuclear forces, which are primarily land-  
7 based. The People's Liberation Army Force, for the first  
8 time since the 1980s, has now readopted a nuclear mission,  
9 beginning in 2019.

10 But all of this means that missile tracking, while an  
11 important component of facilitating missile defense and  
12 counterforce, can ultimately be destabilizing.

13 Senator Cramer: Dr. Soofer, would you want to respond  
14 to any of that?

15 Mr. Soofer: Well, it can be destabilizing, but it can  
16 also be very stabilizing if it provides deterrence. If  
17 China understands that we have these capabilities in place,  
18 they will not start a war, and you have deterrence at the  
19 outset. So in that case it can be stabilizing. It depends  
20 on your perspective.

21 Senator Cramer: Thank you. That is all I have. Thank  
22 you, Mr. Chairman.

23 Senator King: Senator Tuberville.

24 Senator Tuberville: Thank you, Mr. Chairman. Dr.  
25 Sooter, you previously stated that a strong missile defense

1 system is exactly how U.S. prevents escalation and protects  
2 our nation. We are falling behind our peers and near-peers  
3 at an alarming rate. If U.S. continues down this path, what  
4 do you believe the outcome would be, and what changes do you  
5 believe we should -- what should happen in the next 5 years?

6 Mr. Soofer: Thank you, Senator. I think it is  
7 important, perhaps, to think of the problem set in two ways.  
8 One is the threat to the homeland, right, and that is by  
9 Russia and China and by the rogues. For Russia and China,  
10 we are going to have to continue to rely on nuclear  
11 deterrent to prevent them from attacking us, right? But for  
12 the rogues, we have to stay ahead of them. If we do not  
13 stay ahead of them, again, it shows the rest of the world  
14 that we lack the will to compete with North Korea and China,  
15 and that makes our allies very nervous. So that is the  
16 first problem set.

17 The second problem set has to do with regional threats.  
18 The strategy of Russia in Europe and China in Asia is to  
19 keep us from reinforcing our allies during war. If they can  
20 keep us from intervening they feel that they can win. And  
21 so they are building all these missiles in order to attack  
22 our bases, our ports, our ships, to keep us from  
23 reinforcing.

24 Our policy here is to strengthen our regional missile  
25 defenses, help our allies be able to defend themselves with

1 regional defenses, and again, all this provides a deterrent  
2 at the outset so they do not contemplate even a conventional  
3 attack. And I think there is fairly broad bipartisan  
4 consensus on that approach to missile defense.

5 Senator Tuberville: Thank you. Mr. Panda, GMD dates  
6 back 15 years. Are you supportive of updating the NGI?

7 Mr. Panda: Well, Senator, I think it really depends.  
8 If we proceed with NGI, I will not focus on the cost issue  
9 because ultimately, at the end of the day, if we have a  
10 missile defense system that can prevent damage to the U.S.  
11 homeland from thermonuclear attack and it works, it is very  
12 difficult to really put a price tag on that. It is  
13 effectively priceless. Of course, if we look at the record,  
14 reality is a little bit different there.

15 So once again I will just emphasize that if we are to  
16 proceed with NGI, and if we are to pony up the big taxpayer  
17 bill that comes with that, my preference and my sort of  
18 counsel would be that we proceed and demand that testing is  
19 done in a way that really does facilitate the development of  
20 a missile defense system that can work and can provide that  
21 level of defense. Because ultimately, that map I sort of  
22 laid out earlier, when it comes to North Korean ICBM -- and  
23 again, recognizing that that is the primary reason we have  
24 homeland missile defense -- the more we can improve that,  
25 the fewer number of interceptors we can assign to incoming

1 re-entry vehicles, the harder it becomes for Kim Jong-un to  
2 keep up with that pace. Unfortunately, based on our current  
3 approach, that just does not seem to be viable.

4 Senator Tuberville: Thank you. Dr. Soofer, do you  
5 want to add something?

6 Mr. Soofer: I concur.

7 Senator Tuberville: Thank you. Thank you, Mr.  
8 Chairman.

9 Senator King: I want to thank this panel. You have  
10 been very thoughtful and provocative, which is exactly what  
11 we needed to discuss the strategic underpinning of this  
12 subject. And I want to call our next panel to the table.

13 I hope that both of you, in light of the questions and  
14 the discussion today, will file additional testimony if you  
15 feel it would be helpful to the committee. I appreciate it.

16 Our government witnesses, Ms. Leonor Tomero, this is  
17 your second time in a couple of weeks, so welcome back to  
18 the committee. She is Deputy Assistant Secretary of Defense  
19 for Nuclear and Missile Defense Policy; General Glen  
20 VanHerck, Commander, U.S. Northern Command and North  
21 American Aerospace Defense Command; Lieutenant General  
22 Daniel Karbler, Commander, U.S. Army Space and Missile  
23 Defense Command and Joint Functional Component Command for  
24 Integrated Missile Defense; and Vice Admiral Jon Hill,  
25 Director of the Missile Defense Agency.

1 I think we will start with Ms. Tomero on the policy  
2 question, Deputy Assistant Secretary of Defense for Nuclear  
3 and Missile Defense Policy.

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1           STATEMENT OF LEONOR TOMERO, DEPUTY ASSISTANT SECRETARY  
2           OF DEFENSE FOR NUCLEAR AND MISSILE DEFENSE POLICY

3           Ms. Tomero: Thank you, Chairman, and thank you for  
4           welcoming me back to the subcommittee. Chairman King,  
5           Ranking Member Fischer, and distinguished members of the  
6           subcommittee, thank you for the opportunity to testify  
7           before you today on the missile threat and the Department's  
8           missile defense policy and priorities. I ask permission to  
9           submit my opening remarks for the record.

10          Senator King: So ordered.

11          Ms. Tomero: Thank you. Along with left-of-launch  
12          capabilities in our nuclear and conventional forces, missile  
13          defense plays a key role in U.S. defense. With regard to  
14          the threat environment, as missile technology matures and  
15          proliferates, the threat to the U.S. homeland, allies,  
16          partners, and our deployed forces is increasing. The  
17          Democratic People's Republic of Korea, DPRK, continues  
18          development and deployment of more capable intercontinental  
19          ballistic missiles that have destabilized and reshaped the  
20          security environment in East Asia. Iran's short- and  
21          medium-range ballistic missiles comprise the largest missile  
22          force in the Middle East. Both the DPRK and Iran are  
23          extending the range reliability and accuracy of their  
24          missile forces.

25          Additionally, Russia and China continue to develop and

1 field increasingly advanced and diverse regional offensive  
2 missile capabilities. These capabilities form the backbone  
3 of their anti-access aerial denial strategy, intended to  
4 deny the United States freedom of action to protect military  
5 power and to protect our allies and partners.

6 To address these evolving challenges, the Department  
7 will review its missile defense policies, strategies, and  
8 capabilities to ensure that we have effective missile  
9 defenses. The review will align with the National Defense  
10 Strategy and contribute to the Department's approach to  
11 integrated deterrence, and we expect to complete this  
12 strategy by January of 2022.

13 With regard to homeland defense, the Department is  
14 committed to defending the United States against rogue state  
15 missile threats. DoD recently initiated the development of  
16 the next-generation Interceptor, and NGI will increase the  
17 reliability and capability of missile defense of the United  
18 States. As this program moves forward, it will align with  
19 the administration's defense goals and priorities.

20 With regard to regional defense, missile defenses would  
21 also remain central to maintaining the U.S. enduring  
22 advantage to flow forces into militarily consistent regional  
23 environment and to safeguard those forces should a conflict  
24 arise.

25 Additionally, the Department will continue to ensure

1 that we bring a more integrated approach to air and missile  
2 defense that not only assists with defense against various  
3 types of ballistic missile threats but also enables defense  
4 against cruise missiles and unmanned aerial systems. IAMD  
5 will field interoperable and integrated missile defense  
6 sensors, Interceptors, and command and control to improve  
7 capability against a range of threats.

8 With regard to critical enablers, in addition to  
9 improving today's operational systems, we are examining new  
10 enabling technologies. Secretary Austin has noted the  
11 importance of enhancing our global network of integrated  
12 sensors. Space-based and land-based sensors enable a  
13 variety of capabilities such as detection, tracking, and  
14 targeting through all phases of flight for an incoming  
15 missile. U.S. commercial innovation is already transforming  
16 this field.

17 In FY 2022, we will continue to develop the prototype  
18 Hypersonic and Ballistic Tracking Space Sensor, the HBTSS,  
19 that will allow the tracking of hypersonic threats and add  
20 resiliency to our sensor architecture. The Department's  
21 approach for regional hypersonic defense will first focus on  
22 defense in the terminal phase.

23 Information superiority is critical to the future  
24 battlefield, and is necessary to enable rapid planning and  
25 employment in a joint operating environment. To that end,

1 the Department is developing multiple cyber-hardened,  
2 advanced, all-domain awareness for our command and control  
3 architectures that will enable timely and accurate decision-  
4 making to address emerging threats. And we will continue to  
5 develop capabilities for left-of-launch and missile defeat  
6 that will play an important role in effectively countering  
7 limited missile attacks.

8 With regard to cooperation with our allies and  
9 partners, engaging and working with our allies and partners  
10 to enhance our collective missile defense efforts is a core  
11 focus area of the Department. The Indo-Pacific is a model  
12 for cooperative missile defense efforts with strong allies,  
13 including Japan, the Republic of Korea, and Australia. NATO  
14 continues to form the backbone of European joint and  
15 combined operations, and in the Middle East, U.S.-Israel  
16 missile defense collaboration demonstrates the mutual  
17 benefits of technology sharing with our allies and partners,  
18 along with our efforts to strengthen missile defense  
19 cooperation with key Gulf cooperation countries.

20 Additionally, my office leads a series of dialogues that  
21 share information on regional and global missile threats.

22 In conclusion, as the Department prepares its strategic  
23 review, I can assure members of this committee that we are  
24 steadfastly committed to the key missile defense missions  
25 and priorities, including working with allies and partners

1 to meet the challenge of growing missile threats in a cost-  
2 effective manner that strengthens regional and strategic  
3 stability.

4 I look forward to your questions. Thank you.

5 [The prepared statement of Ms. Tomero follows:]

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1 Senator King: General VanHerck.

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1           STATEMENT OF GENERAL GLEN D. VANHERCK, USAF,  
2   COMMANDER, UNITED STATES NORTHERN COMMAND AND NORTH AMERICAN  
3   AEROSPACE DEFENSE COMMAND

4           General VanHerck: Chairman King, Ranking Member  
5   Fischer, and distinguished members of the committee, it is a  
6   privilege to testify before you again today. I am honored  
7   to serve as the Commander of the United States Northern  
8   Command and North American Aerospace Defense Command, and I  
9   am grateful to appear beside my colleagues here as they are  
10  crucial partners in homeland defense.

11          The United States Northern Command and NORAD separate  
12  commands, yet work seamlessly to accomplish the critical  
13  mission of defending North America against all threats,  
14  whether posed by our competitors, natural disasters, or a  
15  pandemic.

16          We are in an era of renewed strategic competition, and  
17  this time we are facing two nuclear-armed peer competitors,  
18  both focusing on circumventing our homeland defenses.  
19  Additionally, North Korea's recent unveiling of a new  
20  intercontinental ballistic missile, capable of threatening  
21  North America and Hawaii, is means to constrain options in a  
22  crisis.

23          I remain concerned about my ability in the near future  
24  to defend the homeland. Potential adversaries continue to  
25  develop capabilities to hold our homeland at risk, from all

1 vectors, all domains, kinetically and non-kinetically. They  
2 seek to exploit a perceived gap between our nuclear  
3 deterrent, which I believe is the foundation of homeland  
4 defense, and our conventional homeland defense capabilities.  
5 To close this perceived gap, we must accelerate efforts to  
6 transform our culture to think and operate globally and  
7 digitally across all domains, and factor homeland defense  
8 into every strategy, plan, force management, force design,  
9 acquisition, and budgetary decision.

10 The United States Northern Command and NORAD are  
11 aggressively pursuing a left-of-launch framework that  
12 provides the President of the United States and the  
13 Secretary of Defense less escalatory options that increase  
14 decision space and deterrence in strategic competition, vice  
15 end-game kinetic defeat and conflict.

16 With the Missile Defense Agency leading the effort,  
17 progress on the next-generation Interceptor is on the right  
18 trajectory, but further delays will be detrimental to  
19 defense and deterrence by denial capability. We must also  
20 capitalize on globally layered, multi-threat detection  
21 systems, such as over-the-horizon radar, hypersonic and  
22 ballistic missile tracking space sensor, which can  
23 adequately address both my capability and capacity concerns  
24 of emerging threats.

25 Progress is also being made on the information

1 dominance capabilities within the Department. The  
2 additional capabilities USNORTHCOM is pioneering, as  
3 demonstrated in the latest Global Information Dominance  
4 Experiment, are focused on prying data from existing  
5 stovepipe networks to enable all-domain awareness. By  
6 ingesting data streams into cloud-based architecture, where  
7 the power of artificial intelligence and machine learning is  
8 unleashed, we can drastically reduce processing time across  
9 the globe and rapidly enable information dominance and  
10 decision superiority, all 11 combatant commanders endorsing  
11 and field these capabilities as soon as possible.

12 United States NORTHCOM and NORAD will continue to lead  
13 and accelerate the Department's digital transformation  
14 through development of global, all-domain awareness,  
15 sensors, and networks, data standards, and infrastructure to  
16 share information quickly and efficiently. In doing so, we  
17 will improve our ability to defend the homeland against  
18 emerging threats, including improved ballistic missiles,  
19 low-altitude hypersonics, and long-range, low-radar, cross-  
20 section cruise missiles.

21 NORTHCOM and NORAD take solemn pride in executing the  
22 Secretary of Defense's top priority by standing watch to  
23 defend our nation. I am grateful for the trust and  
24 responsibility you place in me as the Commander of NORTHCOM  
25 and NORAD. Thank you, and I look forward to your questions.

[The prepared statement of General VanHerck follows:]

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Senator King: Thank you. General Karbler.

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1           STATEMENT OF LIEUTENANT GENERAL DANIEL L. KARBLER,  
2   COMMANDER, U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/JOINT  
3   FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE

4           General Karbler: Chairman King, Ranking Member  
5   Fischer, and distinguished members of the subcommittee, I am  
6   honored to testify before you today. Thank you, especially,  
7   during the unprecedented health crisis of this past year for  
8   supporting our servicemembers, civilians, contractors, and  
9   their families, in your continued support to space and air  
10   and missile defense.

11           I am here today as the Commander of the Joint  
12   Functional Component Command for Integrated Missile Defense,  
13   and as the Army's proponent for Air and Missile Defense, or  
14   AMD, Forces and Capabilities. I am responsible for  
15   providing General VanHerck the soldiers who stand ready to  
16   defend our nation from an intercontinental ballistic missile  
17   attack, as well as the soldiers who provide critical missile  
18   warning to Army and joint warfighters.

19           As air and missile threats become more diverse and  
20   numerous from adversaries worldwide, the Army AMD enterprise  
21   continues to work hard to ensure our warfighters and our  
22   homeland are protected.

23           I would like to take this opportunity to briefly thank  
24   and highlight the mission accomplishments of our team of  
25   nearly 3,000 soldiers, sailors, airmen, marines, guardians,

1 and civilians in the challenging COVID environment that we  
2 continue to endure. During this past year, in support of  
3 SPACECOM, STRATCOM, and NORAD/NORTHCOM, these outstanding  
4 men and women provide the Army and Joint Force with  
5 satellite communications, space situational awareness, and  
6 missile warning defense, and protected our homeland 24/7,  
7 365, from ballistic missile attack. Even in the pandemic  
8 environment, they did not miss a beat.

9 To outline one of numerous examples of putting mission  
10 first and how Army families have sacrificed during the  
11 pandemic, members of our ground-based missile defense crews  
12 adhered to 12 consecutive months of stringent measures  
13 ensuring the uninterrupted execution of their mission,  
14 including sequestering crew members from their homes and  
15 families. Essentially, our missile defense crews lived in a  
16 bubble throughout their operational rotations on this  
17 essential, no-fail mission. While they and their families  
18 reside in Colorado Springs, Colorado, and Fort Greely,  
19 Alaska, the crewmembers were basically away from their  
20 families for extended period of time.

21 A positive I have drawn from this pandemic is my daily  
22 realization that I have never been more proud and thankful  
23 for our greatest asset, our people. Every day I am awed by  
24 their dedication and unwavering sacrifices to the nation. I  
25 consider it an honor and a privilege to lead and serve

1 alongside them. The continued support of Congress is  
2 critical to our ability to recruit, develop, retain, and  
3 resource such a highly qualified and mission-ready team.

4 I look forward to addressing your questions. Thank  
5 you.

6 [The prepared statement of General Karbler follows:]

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1           Senator King: Thank you very much. Admiral Hill.

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1 STATEMENT OF VICE ADMIRAL JON HILL, DIRECTOR, MISSILE  
2 DEFENSE AGENCY

3 Admiral Hill: Good afternoon, Chairman King, Ranking  
4 Member Fischer, and distinguished members of the  
5 subcommittee. Thank you for your time today to discuss the  
6 important topic of missile defense. For present budget  
7 2022, MDA is requesting \$8.9 billion to develop and deploy  
8 homeland defenses against the rogue state threat, improve  
9 regional defenses against the existing and the emerging  
10 threats.

11 The threat can be summed up, as Senator Fischer  
12 mentioned earlier, much less predictable today, but they  
13 come with countermeasures and multiple warheads, potentially  
14 with nuclear payloads. The hypersonic and cruise missile  
15 threats present high speeds and global maneuvering  
16 challenges. So despite the pandemic restrictions, that  
17 General Karbler mentioned now, we have advanced the program  
18 on several fronts this past year, and I would like to walk  
19 you through some of those.

20 From command and control and battle management, we call  
21 that program C2BMC, we continue with our spiral upgrades to  
22 integrate across the missile defense system, supporting the  
23 combatant commands and the Services with tracking, queueing,  
24 and discrimination data. "Discrimination" is our fancy word  
25 for picking out the lethal object in the complex, and we

1 will come back to that in just a bit.

2 From a space-sensing perspective, improving our  
3 detection and our tracking and discrimination, the  
4 Hypersonic Ballistic Tracking Space Sensor, mentioned  
5 earlier, that development continues with two competitive  
6 awards, focus on an on-orbit demo in FY 2023, and we will  
7 track dim boosting targets and we will track hyper glide  
8 vehicles. And we need to do that soon so we can leverage  
9 that capability in the INDOPACOM theater where we will first  
10 put out our hypersonic defenses in the hypersonic missile  
11 defense kill chain, and I will come back to that in just a  
12 moment.

13 The other space capability I would like to talk about  
14 is the Space-Based Kill Assessment, the SKA system. We  
15 deployed that a couple of years ago. We have a full  
16 constellation up. And what we are doing now is taking what  
17 we see as the flashes when we get intercept and bringing  
18 that to an operational hit assessment for the combatant  
19 commander, specifically for General VanHerck, so that he can  
20 control the homeland defense war.

21 Switching over to land-based sensors, it was mentioned  
22 earlier the Long Range Discrimination Radar that we have up  
23 in Alaska, that is being built now. We did have some  
24 pandemic delays. The Clear Air Force Base closed. We had  
25 radar equipment shipping there. We had to stop it and hold

1 it up. But the team stayed on path, building that radar,  
2 and we have both panels completed this year. We are now  
3 doing radiation, which means the radar is up and running,  
4 doing low-power calibration, and we are going to learn a  
5 lot. It started off at a very small-scale radar out in  
6 Morristown, New Jersey. It is now at its full array size,  
7 and we expect to have government acceptance by the end of  
8 this year.

9 From a homeland defense perspective, we did not talk  
10 much about GBI fleet reliability efforts, the Service Life  
11 Extension Program, and I want to thank Congress for their  
12 support there. You cannot have a weapons system deployed in  
13 2004 and not maintain it, not take those rounds out of the  
14 ground and upgrade them. We are doing that now, in  
15 coordination with NORTHCOM and NORAD. Those missiles come  
16 out of the ground, we change out the boosters, we update the  
17 software in them, we update the seekers, we update the  
18 threat libraries. That builds capacity and capability now,  
19 so that we can close the gap between now and when we  
20 actually deploy the first NGI.

21 What is also important about that is that hardware that  
22 has been in the silos for all those years now becomes the  
23 basis for the analysis that we do to determine reliability.

24 Last year when we had this conversation, it was purely  
25 analytical based, because we did not have that hardware

1 available. So the Service Life Extension Program extends  
2 the life of the current GMD fleet, increases its capability  
3 and capacity, but also gives us the hardware ability to go  
4 and really assess reliability, to build the confidence of  
5 the warfighter.

6 We are also expanding at Missile Field 4. We had some  
7 fallbacks during COVID, but we leveraged the waterways. We  
8 have all 20 silos installed and now we are doing  
9 integration.

10 The next test for GMD, the boost vehicle test 03, BVT-  
11 03. We are developing the capability to not just fully burn  
12 full kinematics of the GBI system, you fly it and only burn  
13 up to the second stage. And why is that important? It  
14 allows you to engage more and more into the battle space.  
15 So there is a lot of activity going on with the current GMD  
16 fleet that is providing the warfighter higher confidence,  
17 higher capability for the future.

18 NGI development, that was mentioned earlier. We are  
19 underway today with two competitive contracts, and I think  
20 that is really important, the fact that the Department has  
21 stepped forward to award those contracts and to have two  
22 really great teams all the way through critical design  
23 review. That is unusual, and I am telling you, it is going  
24 to be hard. But we have the teams that are in place there.  
25 They are perfectly OCI'd, so no conflicts of interest, as we

1 work that important competition. But what did we do that?  
2 So that we can manage the technical risk in the program and  
3 so that we can get to emplacement earlier than the  
4 government estimate of 2028. And both of our contractors  
5 are showing that they are going to come in earlier, and that  
6 is good thing for General VanHerck and the warfighters.

7 Let me switch to the Aegis program, Aegis integrated  
8 air missile defense, continues to advance. We are  
9 delivering the SM-3 Block IB missiles on a multiyear  
10 procurement, the Block IIA missile, which was a cooperative  
11 development with Japan. I am very proud of what we have  
12 done with that missile. We are in production now. The  
13 Secretary of Defense just recently gave us permission to  
14 take the first 11 rounds that were built out of RDT&E and  
15 deploy those today. So that capability is out in the fleet  
16 now, and through Global Force Management it will go to the  
17 right places.

18 We are increasing our ability with sea-based terminal  
19 -- I will talk about that in just a second -- and continue  
20 improvements within the combat systems on the ships and with  
21 the missiles in total alignment with the Navy.

22 FTM-44 was mentioned already, executed at the end of  
23 last year. Another great COVID story. Another great  
24 Department all-hands-on-deck story. We had it originally  
25 planned in May. We executed in November, due to the

1 pandemic. We had to do a lot of deconfliction on the range.  
2 Dan helped me keep the target in place on Kwajalein. That  
3 is a tough area to have a target go into shutdown mode. But  
4 we charged the batteries, charged the batteries. We made  
5 sure that the ship crew stayed safe. We worked very closely  
6 with the Navy. So the USS John Finn, a new construction,  
7 integrated and air missile defense ship, could go out and  
8 execute that mission. That same ship participated in the  
9 last GMD test and tracked the ICBM.

10 So we are all about risk reduction, making sure that we  
11 do things right, and that was a threat-representative  
12 target. It was a defense-of-Hawaii scenario, from North  
13 Korea to Hawaii. That is what it is. If you look at the  
14 geography, that is what we did. So that was a threat-  
15 representative, approved by DOT&E. Worked very closely with  
16 the intelligence community to ensure that we were threat-  
17 representative and that we were testing like we fight.

18 Let me shift out to Europe, Aegis Ashore Poland. This  
19 has been a tough one. For the last couple of years we have  
20 told you we were at 90 percent construction completion.  
21 Today I going to tell you we are at 90 percent or more  
22 construction completion. But the great news, within the  
23 last couple of months, through the pandemic, you saw that in  
24 Europe, we managed to raise the four spy radar rays, put  
25 them in place as a forcing function to construction. We

1 also put up the fire control director. That is really  
2 great. Now we are ready to do install and checkout for the  
3 Aegis Combat System. Very important work.

4 We also took the Aegis Combat System out of the CONEX  
5 boxes they had been sitting in for 2 or 3 years, and we ran  
6 full digital signal analysis on it to make sure that that  
7 system works, and we are going to upgrade that system to  
8 make sure there are no obsolescence. We are in tight  
9 coordination with the Army Corps, and Aegis Ashore Poland is  
10 on track to complete its construction.

11 A little bit on Aegis Sea-Based Terminal. That is the  
12 first regional hypersonic missile defense capability that is  
13 deployed with the aircraft carrier strike groups today, and  
14 it is important that we have that capability now, because  
15 the hypersonic threat is there now. What we want to do is  
16 move further back into that trajectory, engage earlier, make  
17 the terminal defense even better. And so the glide phase  
18 interceptor is under acceleration in the PB 2022 budget, and  
19 that is an important capability for the country. It ties  
20 right into HBTSS. Ties right into the land-based sensors  
21 and sea-based sensors that can give us the fuse track that  
22 we need to take a hypersonic maneuvering capability out in  
23 the glide phase, and then we hit it again in terminal.

24 Let me switch to Guam. PB 2022 includes funds for the  
25 initial development of a survivable and operationally

1 effective IMD for Guam, and those capabilities that I have  
2 talked about, regional from Aegis, and what I am going to  
3 talk about in just a second in THAAD, are all part of that  
4 architecture consideration today, and we are working that  
5 hard so that we can come forward and tell you exactly what  
6 we are going to do on Guam. Staying very close to  
7 INDOPACOM.

8 THAAD, we have continued the Interceptor procurement,  
9 production, and training support, and we are developing the  
10 capabilities to address the evolving threat in very close  
11 coordination with the U.S. Army. THAAD and Patriot  
12 integration, we have been working that for the last 2 or 3  
13 years. We completed the first phase, where we separate the  
14 launchers from the THAAD battery for flexibility for the  
15 combatant commander. We have done Patriot launch on remote  
16 from THAAD data. Pretty impressive. Also flexibility for  
17 the warfighter. And our next test this year is to control  
18 the Patriot battery using THAAD. That may not all make  
19 sense to you but what that means is full flexibility where  
20 the combatant commands need it, and the Army will be working  
21 its urgent material release once we finish that test.

22 So I will wrap up by saying a little bit about  
23 technology, investing in innovative and disruptive  
24 technologies to address the emerging threats, including  
25 regional, layered hypersonic and cruise missile defense

1 capabilities. Space sensors, land- and sea-based sensors,  
2 networked through the Command and Control Battle Management  
3 System set the stage for hypersonic and cruise missile  
4 defense capabilities, and thank you. I appreciate  
5 everything that you do for this committee, and thank you for  
6 your time today.

7 [The prepared statement of Admiral Hill follows:]

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1           Senator King: Thank you very much, Admiral. This  
2 subject gets more and more complicated the more we get into  
3 it, because I think when we talk about missile defense it is  
4 important to emphasize we are not only talking about Fort  
5 Greely and Vandenburg. We are talking about THAAD, Patriot,  
6 and Aegis.

7           You have to understand that from the point of view of  
8 this committee, one of the important considerations we have  
9 is opportunity cost. This is a tight budget year that we  
10 are looking at, and so when you spend money on one thing,  
11 that means you do not have money to spend on something else,  
12 and that is something that we have to look at.

13           You mentioned something very important, and that is we  
14 are developing hypersonic defense. Could you expand upon  
15 that, being aware that this is a nonclassified setting? Can  
16 we defend a carrier against a hypersonic glide missile  
17 today?

18           Admiral Hill: We have terminal capability today.

19           Senator King: "Terminal" means in the last stages  
20 before it hits the ship.

21           Admiral Hill: And that is typically where you will  
22 start on taking on that kind of threat. It happens to be in  
23 the hardest environment. You are in the atmosphere. You  
24 are maneuvering. But we do have that capability deployed  
25 today, and we are continuing to improve it.

1           Where we need to go is to take it out in that glide  
2 phase, and that is the Glide Phase Interceptor that you will  
3 see in the PB 2022 budget.

4           Senator King: We are all talking about hitting bullets  
5 with bullets. What is the role of directed energy, and are  
6 we putting sufficient resources into directed energy as an  
7 alternative, and frankly, a cheaper alternative, and perhaps  
8 a more effective one to deal with a maneuverable incoming  
9 missile?

10          Admiral Hill: Thank, Senator. That is a very tough  
11 one to discuss in this environment. I would love to come  
12 see you on that one. There are initiatives there. I just  
13 can't talk about here, at this session.

14          Senator King: Thank you. It is being considered.

15          Admiral Hill: Yes, sir.

16          Senator King: General VanHerck, I think you used a  
17 term, and I wrote it down. You talked about "prying the  
18 data" out of someplace. Am I correct? Is that what you  
19 said?

20          General VanHerck: Chairman, that is correct. I did  
21 say that. There are lots of data from domain awareness  
22 sensors around the globe that all too often is not shared to  
23 develop a globally integrated picture that would give us the  
24 ability to get further left and give decision space to our  
25 senior leaders.

1           Senator King: I completely agree, and as you know,  
2 Goldwater-Nichols was a landmark statute which led us to  
3 joint commands. But we do not necessarily have joint data  
4 access and capability development. So I hope that is  
5 something we might be able to address. But when one of our  
6 generals says he has to pry the data out of another agency  
7 in order to do his job, I think that tells us we have got a  
8 problem we should address.

9           General VanHerck: Chairman, I am encouraged with the  
10 Department. The Secretary just signed the Joint All-Domain  
11 Command and Control Strategy. We are moving forward going  
12 down that path. I would also say that we are going to have  
13 to look at policy and laws as well, especially within the  
14 intel community, of sharing data to ensure that we get a  
15 full global picture.

16          Senator King: Admiral, are you persuaded that the  
17 accuracy and the ability of the Ground-Based Interceptors is  
18 sufficient to justify the cost? Let me put it in a more  
19 difficult question. Which would you rather have -- the  
20 Ground-Based Interceptors or five additional Aegis  
21 destroyers?

22          Admiral Hill: Well, for the ballistic threat, the GBIs  
23 today and the NGIs tomorrow go after that threat. They are  
24 spec'ed for that. NGI, as you know, it has got a hard  
25 requirement on it. It is to cover all 50 states. That is

1 why it is a 50-foot missile and 50-foot in diameter. It has  
2 got a hard requirement on it. I would rather have more GBIs  
3 and NGIs against that threat.

4 The Aegis ships and what they do, for a totally  
5 different mission, and they are multi-mission ships. They  
6 have a lot of different missions that they are excellent  
7 for.

8 Senator King: But THAAD, Aegis, and Patriot have a  
9 higher success rate, do they not?

10 Admiral Hill: The way the success rate was mentioned  
11 earlier, it has always entertained me. If you have a  
12 failure in a program, you are going to learn from that  
13 failure. Talk about it all the time. You learn from your  
14 failures, right?

15 Senator King: Yeah, but if there is an incoming  
16 missile from North Korea and we miss it, learning from the  
17 failure is not going to make people feel better.

18 Admiral Hill: Absolutely not. And so that is why,  
19 over time, you want to improve the program, and then your  
20 math really needs to take a look at the current  
21 configuration that is in the ground, and the current  
22 configuration that has been tested against realistic  
23 targets. If you add up failures from 1998 into the number,  
24 of course you are going to have a lower reliability number,  
25 using that right-world information. I will tell you that

1 the reliability is much higher, and I think that the  
2 conference of the warfighter is based on that.

3 Senator King: Final question, and my wife says I say  
4 "finally" too much and it gets people's hopes up.

5 [Laughter.]

6 Senator King: But in this case, final question. You  
7 heard Mr. Panda talk about more transparency, clarity on  
8 testing, clearer reporting on what exactly the targets are.  
9 I could be in a classified setting, but would you support  
10 that suggestion, because it seems to me we have a  
11 responsibility, as the people who are funding and using the  
12 taxpayers' money, to ensure that these things are going to  
13 work. So would you support additional clarity and  
14 transparency with regard to testing?

15 Admiral Hill: Absolutely, Senator. If someone has got  
16 a security clearance I will happily talk to them about that.  
17 And I will tell you, we have got a great test record that I  
18 am very proud of. And you can't just look at live fire.  
19 That is one shot, right, in a broad battle space. We have  
20 got to look at the ground test data. That is where your  
21 real numbers and your statistics come from. So I would be  
22 happy to show that to anybody that is interested and has the  
23 appropriate clearance.

24 Senator King: I think that is something we can follow  
25 up on. Thank you very much.

1 Admiral Hill: Yes, sir.

2 Senator King: Thank you all. Senator Fischer.

3 Senator Fischer: Thank you, Mr. Chairman. Admiral  
4 Hill, a number of news reports have indicated that the  
5 government of Israel plans to submit a request for  
6 additional assistance so that they can replenish their Iron  
7 Dome system following the recent conflict that we have seen  
8 there with Hamas. Has the Department received such a  
9 request?

10 Admiral Hill: I am going to defer that question over  
11 to Policy, but before I do that I will say they are a great  
12 partner. We work very closely with Israel on all layers of  
13 what they do. But beyond that, in terms of the emergency  
14 acquisition, I will send that over to Policy.

15 Senator Fischer: Ms. Tomero, it is good to see you  
16 again. You are going to be a regular here, I think, from  
17 now on.

18 Ms. Tomero: I am looking forward to it.

19 Senator Fischer: Thank you so much for being here.  
20 Can you answer that question for me, please?

21 Ms. Tomero: Yes, absolutely. The Department is  
22 working that request, and as Admiral Hill said, we look  
23 forward to working very closely with Israel as one of our  
24 closest partners. And so the Department is working that  
25 request. What I can do is, because it crosses over several

1 departments within DoD, to come back to you and give you  
2 more detail.

3 Senator Fischer: Okay. I would like to know if it is  
4 going to be a request for supplemental appropriations or if  
5 it is going to reprogram resources.

6 Ms. Tomero: I think if you could allow me to come back  
7 and give you a better answer for the record on that. But  
8 again, the Department is looking at that request for \$1  
9 billion.

10 Senator Fischer: Okay. Great. Thank you. Also, what  
11 are the Department's plans with respect to conducting a  
12 missile defense review? Has that begun? What organizations  
13 are involved in it? First of all, are you going to have a  
14 missile defense review, and what is the process going to  
15 look like on that?

16 Ms. Tomero: Thank you, Senator. We are planning to  
17 start a missile defense review imminently, in the next few  
18 weeks, and look forward to working across the Department  
19 with Admiral Hill's organization, with General VanHerck in  
20 NORTHCOM, with the acquisition community within the  
21 Department. And so it will be done in a coordinated way  
22 across the Department, and we are planning to start very  
23 soon. And we will look at the threat and the changing  
24 security environment, you know, how do we improve and have  
25 effective and affordable missile defense for both the

1 homeland and regional defense.

2 And so as I mentioned in the opening remarks, we will  
3 do that as part of the National Defense Strategy, and it  
4 will also feed into our integrated deterrence review.

5 Senator Fischer: Will it be standalone?

6 Ms. Tomero: That decision has not been made yet.

7 Senator Fischer: Okay. Section 1683 of the FY 2017  
8 NDAA requires the Department to designate a single entity as  
9 the lead acquisition organization for defending the homeland  
10 from cruise missiles. To my knowledge, that designation has  
11 not been made. Can you update us on what the status of that  
12 is?

13 Ms. Tomero: Yes, Senator, you are correct. That  
14 designation has not been made, and is still being worked  
15 within the Department.

16 Senator Fischer: Okay. Thank you. Do you think we  
17 need it? Do we need that designation?

18 Ms. Tomero: This is something that the Department is  
19 still looking at, and I would ask for your indulgence in  
20 allowing me to look across and work with my colleagues on  
21 what the best way forward on this is. And I know the  
22 previous administration also did a lot of work on this too.

23 Senator Fischer: I am going to put General VanHerck on  
24 the spot, and Admiral Hill. What do you think? Do we need  
25 a designation like that?

1           General VanHerck:  Senator Fischer, I do believe it  
2 would be best to have a single entity designated within the  
3 Department for cruise missile defense of the homeland.

4           Senator Fischer:  Thank you.  Admiral?

5           Admiral Hill:  Great, great question.  I also agree we  
6 need a single agency involved.

7           Senator Fischer:  Good.  Thank you.  I will try to get  
8 another one in.  Admiral Hill, does the budget support  
9 delivery of the next-generation Interceptor in 2028, and can  
10 you describe the life extension program MDA has developed to  
11 ensure the current Interceptor fleet remains viable until  
12 NGI is deployed?

13          Admiral Hill:  Thank you, Senator.  When I mentioned  
14 the Service Life Extension Program earlier, based on  
15 congressional support there we kick-started that program,  
16 working very closely with General VanHerck and his team.  
17 And that is going really well, and it will increase capacity  
18 and capability.  I mentioned that we will have the old  
19 hardware that we can assess, and our assessments'  
20 reliability are going to bump up, and we are going to have a  
21 lot more confidence in that.

22          So what we are doing -- I do not like to live off of  
23 plus-ups.  I always appreciate when Congress does that, but  
24 then now we are committed to include that in the budget, so  
25 you will see us including that in PB 2022 as we move

1 forward. And that PB 2022 look into NGI, absolutely. We  
2 are in a good place with both contractors moving out to beat  
3 the government estimate of first emplacement in 2028.

4 That is going to come to the left. I am going to stay  
5 very close to General VanHerck. I am going to stay very  
6 close with all the stakeholders in the building, because  
7 what that means is flight testing will happen earlier, which  
8 means we are going to prepare those threat-representative  
9 targets and then we will be ready to go.

10 Senator Fischer: Good to hear. Thank you.

11 Admiral Hill: Yes, ma'am. Thank you.

12 Senator King: Senator Rosen, via Webex.

13 Senator Rosen: Well, thank you, Chair King and Ranking  
14 Member Fischer, for holding these hearings today. I would  
15 like to thank all witnesses for their service and for  
16 testifying, and General VanHerck, always great to see you  
17 and spend some time with you like we did yesterday. That  
18 was wonderful.

19 I would like to go right into some missile defense  
20 cybersecurity issues. As MDA works to rapidly deploy  
21 missile defense systems to, of course, stay ahead of  
22 threats, I am concerned that we may not be taking potential  
23 cyber vulnerabilities seriously enough before we field new  
24 systems, when the 2019 Missile Defense Review software is  
25 mentioned, only once, and even more alarming, GAO's May 2021

1 report highlights that none of MDA's 17 operational  
2 cybersecurity tests planned for fiscal year 2020 were  
3 conducted, and that cybersecurity testing since 2017 has  
4 revealed several vulnerabilities.

5 So Admiral Hill, in light of recent significant  
6 cyberattacks, of course I do not have to tell you what they  
7 are out in the public space, what steps is MDA taking to  
8 address cybersecurity vulnerabilities, and are you  
9 conducting cybersecurity testing on all deployed and planned  
10 capabilities?

11 Admiral Hill: Yes, thanks, Senator Rosen. Part of the  
12 difficulty of cyber testing with missile defense systems is  
13 often you have to creep into the networks that are  
14 operational. So it does require a lot of coordination with  
15 the combatant commands. And when you look at what it takes  
16 to execute a cyber test in a pandemic, no surprise that  
17 there were delays in executing those test in 2020. But I  
18 will tell you, we have conducted a number of adversarial  
19 assessments. Those are called the AAs. We have also moved  
20 out and done the PCO, which is the persistent cyber  
21 operations. We have an agreement with DOT&E to start  
22 executing that this next year, so we have the team in place  
23 and ready to roll.

24 I absolutely agree with you that it is something we  
25 should worry about. When you look at a system as networked

1 as missile defense is, 18 time zones, tying all the sensors  
2 together, fusing data, absolutely. I want to know where  
3 those vulnerabilities are, so when we execute those tests we  
4 take action on them. You can see it in our budget exhibits.  
5 You will see cybersecurity across every single element of  
6 the missile defense system, and you will see that we are  
7 martialing the best people on the planet to execute those  
8 adversarial assessments and the persistent cyber operations.

9 Senator Rosen: Well, I appreciate that, and it is a  
10 large operation. It is difficult to test. I would argue  
11 that a lot of those tests are also done remotely, in the  
12 privacy of offices. As we do some of those treat  
13 assessments it is important that we get back on a regular  
14 schedule, because the complexity also means it is more  
15 vulnerable, because there are many points of entry.

16 I would like to move on now and build on Senator  
17 Fischer's question about the Iron Dome. So Ms. Tomero,  
18 given the U.S. Army's acquisition, of course, of the Iron  
19 Dome technology, what lessons do you think that you have  
20 learned, or we have learned from the recent Israel-Hamas  
21 conflict, and more specifically, are you concerned about the  
22 ability of hostile actors to launch a massive barrage of  
23 rockets designed to overwhelm these short-range missile  
24 systems? And Ms. Tomero and General Karbler, you can both  
25 respond. Ms. Tomero, you can go first, please.

1 Ms. Tomero: Thank you. Again, there has been a lot of  
2 continuity and support for cooperative missile defense with  
3 Israel and supporting Israel's ability and capacity to  
4 defend itself, and we will continue to do so. And my  
5 understanding is, according to Israel, their success rate is  
6 very high.

7 Senator Rosen: Well, and maybe, General, you could  
8 talk about the lessons learned, because we know, and maybe  
9 we are still analyzing what just recently happened, but  
10 there are lessons to be taken from the most recent conflict.  
11 So can you speak to that?

12 General Karbler: Ma'am, I had the opportunity to go  
13 visit the Army soldiers who are out at White Sands Missile  
14 Range as we field the new Iron Dome batteries. They are  
15 training on the systems. I do not know specifically if the  
16 lessons learned have been shared, but I know that the  
17 instructors out there, as they go through their  
18 certification and training, are providing threat-  
19 representative scenarios to those soldiers as they go  
20 through their training. And we expect that that first  
21 battery will be ready for deployment at the end of September  
22 of this year.

23 Senator Rosen: Thank you. I appreciate that. I have  
24 toured those batteries myself, and they are quite  
25 impressive, and I think there will be a lot of things that

1 we learn, going forward.

2 I believe my time is up, Mr. Chairman. Thank you.

3 Senator King: Thank you, Senator. Senator Cramer.

4 Senator Cramer: Thank you, Mr. Chairman. Thanks to  
5 all of our witnesses. I think all but one of my questions  
6 has been already thoroughly discussed, although I will just  
7 add that I look forward to an update on Israel's request for  
8 emergency military aid as well, and more details regarding  
9 that.

10 But I do have a question for you, General VanHerck, and  
11 I really appreciated our time together, our discussions  
12 about over-the-horizon radar, the importance of all-domain  
13 awareness, and, of course, the hugely successful test of the  
14 over-the-horizon radar at Camp Grafton a few years ago. And  
15 I would just ask if you could further explain the importance  
16 of over-the-horizon radar and how it increases the  
17 capability to defend the homeland, and why you need the  
18 resources, frankly, to fast-track some procurement?

19 General VanHerck: Senator, thank you. As we look at  
20 our competitors and potential adversaries, they have  
21 developed capabilities to hold the homeland at risk, below  
22 the nuclear threshold. Those capabilities that they have  
23 developed now are extremely long range. So, for example,  
24 Russian capabilities to launch cruise missiles now extend to  
25 over Russia, that can threaten North America. They can also

1 do that from very far ranges, from our 2:00 towards Europe,  
2 and the same thing in the Northwest as well.

3 Today's legacy North Warning System has served its  
4 purpose and done well, and we are using a system called  
5 Pathfinder to give us some additional capability. But, you  
6 know, physically, the system cannot see over the horizon or  
7 long distances. So over-the-horizon radar gives us the  
8 capability to have domain awareness much further than we do  
9 today, which increases decision space for our senior  
10 leaders, and that is a top priority for me.

11 It is also my number one unfunded priority list, is to  
12 fast-track the site survey, the additional development, so  
13 that we can get this domain awareness capability of over-  
14 the-horizon radar sooner.

15 Senator Cramer: I noticed that on the unfunded  
16 priority list, which is why I asked the question, and given,  
17 of course, my personal interest, what would be the next  
18 steps then for testing and production?

19 General VanHerck: I would have to defer to the Service  
20 on that one. I am not sure what those next steps are. For  
21 us it would be to get the additional funding here, which is  
22 \$25 million, to move forward to fast-track site development  
23 and those kinds of things. As far as test of the actual  
24 system, I would defer to the acquisition authority on that  
25 one.

1           Senator Cramer: All right. Thank you. That is  
2 everything, Mr. Chairman. Thank you.

3           Senator King: Senator Kelly.

4           Senator Kelly: Thank you, Mr. Chairman. Admiral Hill,  
5 earlier we were talking about terminal phase, protecting the  
6 aircraft carriers with an Aegis system. My understanding is  
7 you talked about a terminal-phase intercept. Does that  
8 change? I mean, this is a relatively new capability. I  
9 assume SM-2, SM-6 --

10          Admiral Hill: SM-6 based.

11          Senator Kelly: SM-6 based. So to get this capability  
12 with the Aegis system in an SM-6, does that change the  
13 ability for the battle group, how it is going to operate,  
14 the range of the Aegis destroyer/cruiser has to be from the  
15 carrier? Does this have other operational considerations,  
16 and how long have we been in this mode, because the  
17 hypersonic threat, as we understand, is real.

18          Admiral Hill: Yes, sir, and it is probably a difficult  
19 answer. I will say that, you know, all carrier strike  
20 groups are very dynamic, so you are not going to tether a  
21 destroyer to an aircraft carrier. The destroyer is going to  
22 go do its business and it will stay in contact with the  
23 destroyer, and the strike group commander will determine the  
24 positioning of those ships.

25          Remember, I am the technical developer. There is

1 nothing that I see that causes a constraint on where the  
2 destroyer or the cruiser might operate in order to protect  
3 the carrier. It is just part of the other many missions  
4 that that strike group is going to carry out.

5 Senator Kelly: And current the fire control solution  
6 comes from the Aegis system. We were talking a little bit  
7 about HBTSS and the test in 2023. Once that system is fully  
8 developed, with regards to our carrier battle groups, does  
9 this change the way the fire control solution -- does it  
10 then come from the HBTSS system down to the cruiser to  
11 launch the SM-2?

12 Admiral Hill: So the way Aegis works, and you sound  
13 very familiar with this, is that the ship is going to  
14 control the missile. And so typically for an organic  
15 engagement where it is using its own sensor, it is going to  
16 drive the missile, because you want to give updates to the  
17 missile. When you have got a maneuvering target there is a  
18 lot of uncertainty in that flight path. And so the help  
19 from the larger, smarter ship to the smaller, less capable  
20 sensor on the front end, you want to drive that missile to  
21 get to the collision, or get it within what we call "Region  
22 R," within its lethal radius.

23 When you bring in offboard sensors, which is a proven  
24 fact with Aegis, we have done launch on remote, which means  
25 we are launching on that remote sensor, and we have done

1 engage on remote, where the ship never sees it with its own  
2 organic sensors. It is just controlling the missile and  
3 giving in maneuver commands as it is taking data from  
4 another radar.

5 HBTSS will follow a very similar pathway. So being  
6 able to see down from space, warm tracks going over warm  
7 Earth, that is really tough science, but we have got that  
8 licked. We have shown that we can do data on the ground.  
9 That sort of capability gives us that global coverage. But  
10 it is going to work the same way. That data will come down  
11 and come through C2BMC to the ship, and then ship is driving  
12 the missile based on what it is seeing from HBTSS. So it  
13 does give you more dynamic maneuver within that larger  
14 picture, but no big major change.

15 Now in the future, it would be great to launch the  
16 missile from the ship and have a space asset take it over.  
17 We are not there yet, so we are going to crawl, walk, run on  
18 that.

19 Senator Kelly: All right. Well, I am interested to  
20 see how the test goes in 2023.

21 Admiral Hill: Yes, sir.

22 Senator Kelly: General VanHerck, yesterday we were  
23 talking a little bit about cruise missile defense of the  
24 homeland, and in the \$247.9 million budget to support  
25 development of hypersonic defense capabilities, I believe

1 there is about \$14 million in there, or there is a requested  
2 \$14 million for cruise missile defense of the homeland.

3 So General, what progress can we expect to see if that  
4 money is approved by Congress in the coming fiscal year?

5 General VanHerck: I believe that is money that he is  
6 taking internally in the Missile Defense Agency, that was  
7 not actually dedicated towards cruise missile defense, but  
8 he is taking that. Is that correct, Admiral Hill?

9 Admiral Hill: That is correct. So I am not the  
10 designated agent for cruise missile defense of the homeland,  
11 but I recognize the need. That threat is real. We stay  
12 very close with NORAD and NORTHCOM. And so we have learned  
13 forward to put funding into the budget so we could help with  
14 that architecture work, do the spectrum analysis, get the  
15 radars in place. So it is our way to put the foot forward,  
16 even though I am not the designated agent.

17 General VanHerck: I would point out, on my unfunded  
18 priority list I do have a request for elevated radar here in  
19 the National Capital region, which would give domain  
20 awareness for potential cruise missile threats, much beyond  
21 what we have today. It also gives a warning awareness for a  
22 movement of senior officials and those kinds of things.  
23 That funding is \$27 million.

24 Admiral Hill: And you will see that same issue in the  
25 unfunded priority list from the Missile Defense Agency.

1 Senator Kelly: Thank you.

2 Senator King: Thank you, Senator Kelly. Senator  
3 Sullivan, we are delighted you are here, and we reached a  
4 consensus to close Fort Greely.

5 [Laughter.]

6 Senator Sullivan: Well, Mr. Chairman, I am glad to be  
7 here, and I was actually watching the first panel, so I am  
8 sorry I did not get down here in time. But I actually do  
9 have a comment or two. I agree with Senator Fischer on  
10 that, the one witness who was making the argument that  
11 somehow the China-Russia nuclear modernization program was  
12 driven in part by the GBIs at Fort Greely, I think, no  
13 offense to our esteemed witnesses, was one of the more  
14 ridiculous arguments I have heard in quite a while.

15 But, Admiral Hill, can you just mention -- it is not  
16 just North Korea that we are looking at with regard to our  
17 missile defense. It is other rogue nations. We have the  
18 capability, given our location, with regard to rogue nations  
19 like Iran, don't we?

20 Admiral Hill: Absolutely. So when I say rogue  
21 nations, I mean North Korea and Iran. And so NGI and the  
22 GBI fleet today was geared to protect us against North Korea  
23 and Iran.

24 Senator Sullivan: Correct. And I also watched the  
25 Chairman's discussion of deterrence, and I think it is

1   questionable whether Kim Jong-un is a rational actor. I  
2   definitely think it is questionable whether the Ayatollah is  
3   a rational actor. And I think it is the responsibility of  
4   this Congress to make sure we do not place that bet on  
5   deterrence. The whole idea is if either of them want to go  
6   out in a blaze of glory, we shoot down all their missiles,  
7   and then we destroy their countries. But we don't get  
8   destroyed first. Isn't that the whole point of our missile  
9   defense?

10       Admiral Hill: I will defer to Policy.

11       Senator Sullivan: We don't take the punch. We deliver  
12   the punch, we parry the punch, and then we deliver the  
13   punch.

14       Ms. Tomero: Right. There has been long consistency  
15   that we have missile defense against a limited attack  
16   against the homeland, but, you know, as --

17       Senator Sullivan: We shouldn't take the risk, though,  
18   that Kim Jong-un and the Ayatollah are rational actors and  
19   would be deterred by deterrence.

20       Ms. Tomero: Again, correct. If they were to launch a  
21   limited attack against the United States, that is the  
22   mission of missile defense, and we strongly support  
23   continuing that --

24       Senator Sullivan: Let me ask another question. So the  
25   history, unfortunately, of missile defense -- and I do not

1 want to be too partisan here, but typically Republican  
2 administrations have supported it, Democratic  
3 administrations have not. We made a good breakthrough in  
4 this committee. In 2017, my bill, the Advancing America's  
5 Missile Defense Act, had 20 Republican co-sponsors, 10  
6 Democratic co-sponsors. So missile defense has become  
7 bipartisan, which is really, really important to make it  
8 sustainable.

9 But I will tell you, I am a little bit worried, and  
10 Admiral Hill, here is why I am worried. There are some  
11 Senators who are now starting to ask the question, "Hey, do  
12 we need it at all?" That is their prerogative, but I think  
13 that is indicative of kind of trying to back, hey, now that  
14 the other party is in charge we are going to get rid of it.  
15 I am also very concerned about the President's budget, which  
16 reflects a 15 percent cut in the MDA's budget, notably 50-  
17 plus programs that the MDA administers, over 70 percent are  
18 expected to realize a cut, including the Ground-Based  
19 Midcourse Defense program.

20 So, Admiral Hill, do you have concerns that the  
21 requested level of funding will result in reduced readiness  
22 and reliability to defend our nation?

23 Admiral Hill: Senator, thanks. Great question.  
24 First, I will agree with you that missile defense should  
25 always be a bipartisan issue.

1           Senator Sullivan:  Yep, and we have made good strides  
2   in that regard.

3           Admiral Hill:  Yes, sir.  For me and my team -- I  
4   always call them the stellar team, and we have a noble  
5   mission -- our mission is plain and simple:  protect the  
6   American people, protect our forward deployed forces and our  
7   allies and friends.  So straight on that.

8           Senator Sullivan:  So the budget.

9           Admiral Hill:  Yes, sir.  So over to the budget.  You  
10   know, like all -- and we talked about this before you  
11   arrived, sir, is there is a top-line reduction, and so we  
12   had to prioritize.  And I think we did it right.  So when  
13   you see our unfunded priority list, where we had to take our  
14   risk was in production.  So you will see at the top of that  
15   list the need to procure more interceptors, because that is  
16   where I had to take risk in order to not see the falloff of  
17   availability, reliability of the current GBI fleet.  In  
18   fact, we make sure that program is rock solid and moving  
19   forward with the Service Life Extension Program.

20          Senator Sullivan:  But you would prefer not to have a  
21   15 percent cut.

22          Admiral Hill:  I always prefer to be able to have a  
23   full balance of science, technology, development, testing,  
24   and sustainment support to the services.  Absolutely.

25          Senator Sullivan:  Thank you.  Mr. Chairman, can I ask

1 one final question -- I know I am running out of time -- and  
2 it is one that I am going to depart a little bit from the  
3 primary purpose of today's engagement. It will not surprise  
4 you. General VanHerck, as the advocate for the Arctic in  
5 terms of the military's capability, you may have seen the  
6 Secretary of Defense and the DepSec, in their confirmation  
7 hearings, said that they were going to fully resource the  
8 different Service strategies, Arctic strategies. I remain  
9 concerned that those strategies are not being effectively  
10 implemented by the Army, Navy, and Air Force.

11 How do you see the Services implementing their  
12 respective Arctic strategies as part of this budget's  
13 mission, given your overall role as the Arctic military  
14 advocate as the NORTHCOM commander?

15 General VanHerck: Senator, I think when I look at the  
16 FY 2022 budget, I see an inching along in all of the  
17 Service. I am encouraged they all have strategies, and the  
18 Department has a strategy, and my strategy heavily relies on  
19 the Arctic. But we did not move the ball very far down the  
20 field this year in the budget, with regards to resourcing  
21 the Arctic.

22 Senator Sullivan: Thank you. Thank you, Mr. Chairman.

23 Senator King: Thank you. Senator Tuberville.

24 Senator Tuberville: Thank you. General VanHerck, if  
25 the NGI development is delayed, do we have a good backup

1 plan, or are we going to fall so far behind we cannot catch  
2 up?

3 General VanHerck: Senator, there is not a backup to  
4 NGI. As I said in my statement, I remain concerned about my  
5 capability and capacity to defend against a ballistic  
6 missile threat from DPRK, or even if Iran developed one, and  
7 slipping longer than 2028 would increase my concern and risk  
8 to be able to meet the mission I have been given.

9 Senator Tuberville: Thank you. General Karbler, have  
10 you got anything to follow up on that?

11 General Karbler: Just with respect to I provide the  
12 soldiers that do the missile defense mission. We train to  
13 the threat scenarios. We work very closely with MDA through  
14 software development, the testing, et cetera, so as the  
15 threat evolves, as the software evolves, our soldiers stay  
16 trained and ready for it.

17 Senator Tuberville. Thank you. Admiral Hill, for the  
18 second or third year in a row our number one unfunded  
19 priority is a defensive system for Guam. If our number one  
20 commander and our number one command is saying that is his  
21 number one priority, I believe the best offense is a good  
22 defense, and you need both. In your opinion, would a  
23 defense system for Guam save the American people money and  
24 free up ships for the Navy?

25 Admiral Hill: Senator, thank you. You sound like a

1 coach.

2 [Laughter.]

3 Admiral Hill: Absolutely, right. So when I look at  
4 the defense of Guam, and anybody looks at it, you have to  
5 have a sensor architecture, you have the fire control  
6 network, and you have to have weapons to protect it. If you  
7 are going to base there, if you are going to leverage  
8 offensive power and to power projection from Guam, you have  
9 to protect it.

10 So yes, I believe that we do save money. If there was  
11 a way for us to free up the ship station so we could give  
12 those ships back to the maneuver force of the Navy, that is  
13 what we want to go do. So we are looking at regional  
14 system. We are in the middle of that study now, and as soon  
15 as we have that architecture laid down we will come and see  
16 you.

17 Senator Tuberville: How many ships does it take,  
18 moving in and out, to protect?

19 Admiral Hill: So generally, if you are going to have  
20 one station, you are going to need four ships. You have got  
21 one coming, you have got one going, you have got one in the  
22 training cycle, and one under repair.

23 Senator Tuberville: Wow. Does NGI involved with the  
24 threats we are seeing build from North Korea and other  
25 malign actors, will we be prepared?

1           Admiral Hill: With NGI I believe we will be prepared,  
2 and I think the reason why, if you take a look at what the  
3 intelligence sources tell us, the first intelligence, we  
4 know that those threats are not going to just be unitary,  
5 single-shot devices. They are flying with countermeasures,  
6 they are flying with multiple re-entry vehicles, multiple  
7 maneuver vehicles. So the NGI answer to that, and having  
8 two companies, two great American companies, moving forward  
9 and competing against each other to beat the timeline and to  
10 reduce the risk in the program, we are going to come forward  
11 with a capability that has multiple warheads on it, that can  
12 reduce the shot doctrine.

13           That is our goal. I want to make the job for General  
14 VanHerck and his reliefs downstream much easier, to where  
15 they do not have worry about numbers of missiles in the  
16 arsenal, that they have the capability they need to take on  
17 what is coming at us. And we know, by looking at the threat  
18 projections and where they are going, that we have got to  
19 take on that higher complexity threat.

20           Senator Tuberville. Thank you. That is all.

21           Senator King: I want to thank you all very much.  
22 Thank you for your service and for your dedication to this  
23 complex, difficult, and important mission. Thank you for  
24 your testimony here today, and I will make the same  
25 statement I did to the prior panel. If there are thoughts

1 that you have that you think would be helpful to us, please  
2 supply them to the committee between now and the beginning  
3 of next week.

4 Thank you again all for your service, and we will look  
5 forward to working with you in the defense of our nation.

6 Thank you. The hearing is adjourned.

7 [Whereupon, at 6:07 p.m., the subcommittee was  
8 adjourned.]

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