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, May 26, 2021

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

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

Subcommittee Members Present: King [presiding], Rosen, Kelly, Fischer, Rounds, Cramer, and Tuberville.
OPENING STATEMENT OF HON. ANGUS KING, U.S. SENATOR FROM MAINE

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

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

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

We have spent hundreds of billions of dollars fielding systems to intercept them, premised on this predictable trajectory, and with relatively good success. However, a
new class of missiles, called hypersonic boost glide missiles, are now being fielded with fields in excess of Mach 20, and with an unpredictable, non-ballistic trajectory. We have not fully fielded systems to track much less intercept them. These missiles bring back issues of technology and strategic stability that were once at the forefront of the debates in ballistic missile defense decades ago. I hope today's hearing can address the policy implications of this new class of missiles as well as the advances we are making in intercepting ballistic missiles that we have invested so heavily in.

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

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

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

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

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

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

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

Thank you, Mr. Chairman.

Senator King: Thank you, Senator Fischer.

Dr. Soofer, would you make your opening statement, please.
STATEMENT OF DR. ROBERT M. SOOFER, FORMER DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR AND MISSILE DEFENSE POLICY

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

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

The other school of thought, equally strongly held, argued that protection against nuclear missile attack was not only a moral imperative but that even imperfect defenses could contribute to deterrence of nuclear attack by complicating an adversary's prospect of launching a successful disarming first strike. But with the collapse of the Soviet Union, U.S. missile defense policy shifted from building defenses against near-peer powers to addressing the
emerging threat to the homeland posed by smaller, more unpredictable regional actors, the so-called rogue states. With a return to great power competition, U.S. missile defense policy must also cope with China and Russia's growing regional missile defense capabilities, meant to prevent the United States from reinforcing its allies during a conflict. So by centering on regional missile defense and homeland protection against rogue regimes rather than Russia, policymakers have been able to avoid those bitter Cold War debates about strategic stability.

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

So to stay ahead of the North Korean ballistic missile threat to the homeland, the Obama administration added 14 ground-based interceptors to the 30 fielded by the Bush administration. And they sought to enhance the ground-based nuclear defense system through a redesigned kill vehicle, RKV. The Trump administration altered that acquisition approach to include a fully modernized interceptor, both the rocket and the kill vehicle, and plan to add an additional
20 GBIs, to bring the total to 64. It appears the Biden administration has approved the NGI development to proceed.

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

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

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

Third, proceeding with NGI, and homeland defense more broadly, is important for U.S. grand strategy. Modernizing and expanding our homeland defense underpins President Biden's push to revitalize our ties with allies and friends. An important element of reviewing alliances is convincing allies that the United States is prepared to run risks on
their behalf. Strengthening U.S. homeland defenses provides that confidence by reducing our own vulnerability to North Korean reprisals. After all, why would our allies expect us to come to their defense if we are not first willing to provide for our own defense?

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

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

Now while the SM-3 IIA missile deployed on Aegis ships will continue to play an important regional defense role, the Interceptor may provide a modest additional measure of
protection for the homeland against North Korean ICBMs in an emergency or during a crisis. The ship would have to be in the right place, near our coast, and the right time, and given its smaller size, compared to the GBI, the Interceptor would not provide coverage of the entire United States. Moreover, the SM-3 would not be capable against the more complex Russian and Chinese threats, armed with penetration aids and decoys, nor would it be able to cope with Russia's nuclear air and sea launch cruise missile that can also range the U.S. homeland.

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

Now some have argued that Russia's new novel systems are a response to our missile defense plans. Well, there is an alternative explanation for why Russia is developing these new novel nuclear capabilities. According to Rose Gottemoeller, Obama's former New Start chief negotiator, she said Putin is "after nuclear weapons for another reason, to show that Russia is still a great power to be reckoned with. These exotic systems have more of an apolitical function than a
strategic or security one." In my view, it is more likely an improved SM-3 missile, even in limited numbers, will contribute to collective efforts to meet the challenges posed by the North Korean regime, thereby enhancing regional and international strategic stability.

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

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

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

To conclude, I would just add that homeland and regional missile defenses provide protection for the nation, its deployed forces and allies, and are critical enablers of
a U.S. grand strategy that relies on alliances to maintain a favorable balance of power and a peaceful world order. For about 2 percent of annual defense appropriations, missile defense provides the United States the freedom of action to respond to crises, to shore up allies, to deter adversaries, and, if necessary, to defeat them and limit damage should deterrence fail.

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

Thank you.

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

Mr. Ankit Panda, please.
STATEMENT OF ANKIT PANDA, STANTON SENIOR FELLOW,
NUCLEAR POLICY PROGRAM, CARNEGIE ENDOWMENT FOR INTERNATIONAL
PEACE

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

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

Today our ambitions for national missile defense remain large. Plays to develop a layered homeland missile defense architecture, in particular, for a major plank of the Missile Defense Agency's near-term efforts. This layered architecture stands to take what was once limited plans for a modest, self-contained homeland missile defense
architecture, captured entirely in the Ground Based Midcourse Defense system and its 44 deployed Ground-Based Interceptors, soon to be 64, deployed in Alaska and California, and extended to include sea-based Aegis missile defense, and eventually even ground-based Terminal High Altitude Area Defense systems.

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

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

But Moscow and Beijing reason about our intentions, as we often do theirs, based on our actions and not our statements. As a result, both fear the ability of our
current and future missile defense posture to degrade their strategic nuclear retaliatory capability, if not to completely disrupt it. This, in turn, begets instability. 

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

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

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

So there are numerous ways in which Congress might lead
on this issue to forestall what I see is a costly 21st
century arms race that is already underway and enhance
American national security in the process.

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

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

Finally, Congress should remain actively involved in
ensuring the Missile Defense Agency is subjecting the
Ground-Based Midcourse Defense system to realistic testing
and evaluation. This can include mandating testing against
ICBM target missiles of longer ranges, that would be more
representative of, say, a North Korean ICBM. Future testing should also include more realistic environmental and other stressors, including decoys designed to emulate the infrared signature of a target re-entry vehicle, something that is eminently within North Korea's reach today.

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

[The prepared statement of Mr. Panda follows:]
Senator King: Thank you both.

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

Mr. Soofer: Yes, sir.

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

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

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

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

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

Mr. Soofer: Well, the question is who has got more at stake at this point. The concern is that he would not believe that we would use nuclear weapons against North Korea for fear of his reprisal against the United States. And by having missile defenses, you take away that consideration.
Senator King: Let me change the subject slightly to the capability of the missiles. The missile defense system that we are talking about is principally to deal with the threat of ballistic missiles. Is that correct?

Mr. Soofer: Yes, sir.

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

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

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

Mr. Soofer: I am not completely familiar with the budget requests at this point, but I do know that the Missile Defense Agency is working on sensors and an intercept capability against hypersonic threats. But that is not what I was referring to in the SM-3 IIA missile. The SM-3 IIA is a regional missile, a Navy missile, that intercepts ballistic missiles on the midcourse phase. And the hope is that we could give it some capability to also intercept very simple North Korean ICBM missiles that are
headed from North Korea to, say, Guam or Hawaii, or even the continental United States.

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

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

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

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

So based on that assessment, Senator, I would say that
North Korea can probably today bet on delivering a thermonuclear warhead to the continental United States, and I believe that that is entirely the reason that Kim Jong-un today feels that he has a nuclear deterrent. He declared, in November 2017, that his nuclear deterrent was complete, before turning to negotiations with the United States.

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

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

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

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

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

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

Senator King: Senator Fischer.

Senator Fischer: Thank you, Mr. Chairman. Dr. Soofer, I am sure you have seen a recent letter by a number of advocates to President Biden encouraging him to discuss limitations on U.S. missile defenses in the upcoming talks
with Putin. The letter refers to comments the President made back in 2001, when as a Senator he opposed the Bush administration's plans to deploy a national missile defense system, and predicted it could trigger an arms race with Russia and China.

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

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

What arms race are they talking about? There has been no arms race. In fact, it is just the opposite. When we signed the ABM Treaty in 1972, the Russian inventory, the Soviet inventory, went from about 2,500 warheads to over 10,000 nuclear warheads. It was just the opposite. This idea of action-reaction, it is too simple. There are many
reasons why countries choose not to build nuclear weapons.

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

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

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

What is your view of Russia's complaints against U.S. missile defenses and its attempt to portray its actions,
such as a deployment of a variety of new nuclear systems that were announced by Putin in 2018 as responses to our nuclear defense programs?

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

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

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

Mr. Soofer: Clearly no. Clearly not. They have air-launched cruise missiles, sea-launched cruise missiles. So no.
Senator Fischer: Thank you.

Senator King: Senator Kelly.

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

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

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

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

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

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

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

Mr. Panda:  Sure, Senator. That is an excellent
question. Boost-phase defense has been a topic of query for
over 20 years. There have been multiple studies done. The
primary pitfall with boost-phase defense is that we
physically need to base our Interceptors, or whatever launch
vehicle for the Interceptors, be that a drone, a fighter,
near the adversary's territory. And really the only country
with which this would be viable would be North Korea, which
has ocean and international waters on both sides. But
again, this would only come into play in a crisis.

Effectively, it would be simply infeasible to keep an F-35
or a drone or any other kind of launch vehicle in the air
long enough, at all times, to intercept any North Korean
missile launch.
Another point that I will point out is that, you know, we have been talking strategic stability, and you raised this point with boost-phased defense. There are, of course, other concepts that we have been looking into -- counterforce targeting of North Korean launchers before they can launch, left-of-launch techniques, including cyberattacks.

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

And so I think, you know, if I could counsel one thing it would be that it is fine to pursue missile defense. It is fine to protect the U.S. homeland from nuclear attacks from North Korea. But we need to be careful about the kinds of incentives that we generate for the North Korean leadership in a crisis. Because my assessment is that
fundamentally that Kim Jong-un is rational, but that his rationality, ultimately, has manifested in a way that favors the first use of nuclear weapons in a crisis.

Senator Kelly: Thank you.

Senator King: Senator Cramer.

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

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

We have not talked a lot about China today, so let me just offer one observation there. The primary Chinese concern is not solely our missile defense. China is also quite concerned about our conventional precision strike capabilities. Because Chinese nuclear forces are lean, I believe the Defense Intelligence Agency has attested to the
fact that Chinese nuclear forces are currently in the low
200s but expected to double in size by the end of the
decade.

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

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

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

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

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

Senator King: Senator Tuberville.

Senator Tuberville: Thank you, Mr. Chairman. Dr.
Sooter, you previously stated that a strong missile defense
system is exactly how U.S. prevents escalation and protects our nation. We are falling behind our peers and near-peers at an alarming rate. If U.S. continues down this path, what do you believe the outcome would be, and what changes do you believe we should -- what should happen in the next 5 years?

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

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

Our policy here is to strengthen our regional missile defenses, help our allies be able to defend themselves with
regional defenses, and again, all this provides a deterrent at the outset so they do not contemplate even a conventional attack. And I think there is fairly broad bipartisan consensus on that approach to missile defense.

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

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

So once again I will just emphasize that if we are to proceed with NGI, and if we are to pony up the big taxpayer bill that comes with that, my preference and my sort of counsel would be that we proceed and demand that testing is done in a way that really does facilitate the development of a missile defense system that can work and can provide that level of defense. Because ultimately, that map I sort of laid out earlier, when it comes to North Korean ICBM -- and again, recognizing that that is the primary reason we have homeland missile defense -- the more we can improve that, the fewer number of interceptors we can assign to incoming
re-entry vehicles, the harder it becomes for Kim Jong-un to keep up with that pace. Unfortunately, based on our current approach, that just does not seem to be viable.

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

Mr. Soofer: I concur.

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

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

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

Our government witnesses, Ms. Leonor Tomero, this is your second time in a couple of weeks, so welcome back to the committee. She is Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy; General Glen VanHerck, Commander, U.S. Northern Command and North American Aerospace Defense Command; Lieutenant General Daniel Karbler, Commander, U.S. Army Space and Missile Defense Command and Joint Functional Component Command for Integrated Missile Defense; and Vice Admiral Jon Hill, Director of the Missile Defense Agency.
I think we will start with Ms. Tomero on the policy question, Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy.
STATEMENT OF LEONOR TOMERO, DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR AND MISSILE DEFENSE POLICY

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

Senator King: So ordered.

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

Additionally, Russia and China continue to develop and
field increasingly advanced and diverse regional offensive missile capabilities. These capabilities form the backbone of their anti-access aerial denial strategy, intended to deny the United States freedom of action to protect military power and to protect our allies and partners.

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

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

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

Additionally, the Department will continue to ensure
that we bring a more integrated approach to air and missile defense that not only assists with defense against various types of ballistic missile threats but also enables defense against cruise missiles and unmanned aerial systems. IAMD will field interoperable and integrated missile defense sensors, Interceptors, and command and control to improve capability against a range of threats.

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

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

Information superiority is critical to the future battlefield, and is necessary to enable rapid planning and employment in a joint operating environment. To that end,
the Department is developing multiple cyber-hardened, advanced, all-domain awareness for our command and control architectures that will enable timely and accurate decision-making to address emerging threats. And we will continue to develop capabilities for left-of-launch and missile defeat that will play an important role in effectively countering limited missile attacks.

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

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

In conclusion, as the Department prepares its strategic review, I can assure members of this committee that we are steadfastly committed to the key missile defense missions and priorities, including working with allies and partners.
to meet the challenge of growing missile threats in a cost-effective manner that strengthens regional and strategic stability.

I look forward to your questions. Thank you.

[The prepared statement of Ms. Tomero follows:]
Senator King: General VanHerck.
STATEMENT OF GENERAL GLEN D. VANHERCK, USAF,
COMMANDER, UNITED STATES NORTHERN COMMAND AND NORTH AMERICAN
AEROSPACE DEFENSE COMMAND

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

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

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

I remain concerned about my ability in the near future to defend the homeland. Potential adversaries continue to develop capabilities to hold our homeland at risk, from all
vectors, all domains, kinetically and non-kinetically. They seek to exploit a perceived gap between our nuclear deterrent, which I believe is the foundation of homeland defense, and our conventional homeland defense capabilities. To close this perceived gap, we must accelerate efforts to transform our culture to think and operate globally and digitally across all domains, and factor homeland defense into every strategy, plan, force management, force design, acquisition, and budgetary decision.

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

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

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

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

NORTHCOM and NORAD take solemn pride in executing the Secretary of Defense's top priority by standing watch to defend our nation. I am grateful for the trust and responsibility you place in me as the Commander of NORTHCOM and NORAD. Thank you, and I look forward to your questions.
[The prepared statement of General VanHerck follows:]
Senator King: Thank you. General Karbler.
STATEMENT OF LIEUTENANT GENERAL DANIEL L. KARBLER,
COMMANDER, U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/JOINT
FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE

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

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

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

I would like to take this opportunity to briefly thank
and highlight the mission accomplishments of our team of
nearly 3,000 soldiers, sailors, airmen, marines, guardians,
and civilians in the challenging COVID environment that we continue to endure. During this past year, in support of SPACECOM, STRATCOM, and NORAD/NORTHCOM, these outstanding men and women provide the Army and Joint Force with satellite communications, space situational awareness, and missile warning defense, and protected our homeland 24/7, 365, from ballistic missile attack. Even in the pandemic environment, they did not miss a beat.

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

A positive I have drawn from this pandemic is my daily realization that I have never been more proud and thankful for our greatest asset, our people. Every day I am awed by their dedication and unwavering sacrifices to the nation. I consider it an honor and a privilege to lead and serve
alongside them. The continued support of Congress is critical to our ability to recruit, develop, retain, and resource such a highly qualified and mission-ready team.

I look forward to addressing your questions. Thank you.

[The prepared statement of General Karbler follows:]
Senator King: Thank you very much. Admiral Hill.
STATEMENT OF VICE ADMIRAL JON HILL, DIRECTOR, MISSILE DEFENSE AGENCY

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

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

From command and control and battle management, we call that program C2BMC, we continue with our spiral upgrades to integrate across the missile defense system, supporting the combatant commands and the Services with tracking, queueing, and discrimination data. "Discrimination" is our fancy word for picking out the lethal object in the complex, and we
will come back to that in just a bit.

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

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

Switching over to land-based sensors, it was mentioned earlier the Long Range Discrimination Radar that we have up in Alaska, that is being built now. We did have some pandemic delays. The Clear Air Force Base closed. We had radar equipment shipping there. We had to stop it and hold
it up. But the team stayed on path, building that radar, and we have both panels completed this year. We are now doing radiation, which means the radar is up and running, doing low-power calibration, and we are going to learn a lot. It started off at a very small-scale radar out in Morristown, New Jersey. It is now at its full array size, and we expect to have government acceptance by the end of this year.

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

What is also important about that is that hardware that has been in the silos for all those years now becomes the basis for the analysis that we do to determine reliability. Last year when we had this conversation, it was purely analytical based, because we did not have that hardware
available. So the Service Life Extension Program extends the life of the current GMD fleet, increases its capability and capacity, but also gives us the hardware ability to go and really assess reliability, to build the confidence of the warfighter.

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

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

NGI development, that was mentioned earlier. We are underway today with two competitive contracts, and I think that is really important, the fact that the Department has stepped forward to award those contracts and to have two really great teams all the way through critical design review. That is unusual, and I am telling you, it is going to be hard. But we have the teams that are in place there. They are perfectly OCI'd, so no conflicts of interest, as we
work that important competition. But what did we do that?
So that we can manage the technical risk in the program and
so that we can get to emplacement earlier than the
government estimate of 2028. And both of our contractors
are showing that they are going to come in earlier, and that
is good thing for General VanHerck and the warfighters.

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

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

FTM-44 was mentioned already, executed at the end of
last year. Another great COVID story. Another great
Department all-hands-on-deck story. We had it originally
planned in May. We executed in November, due to the
pandemic. We had to do a lot of deconfliction on the range. Dan helped me keep the target in place on Kwajalein. That is a tough area to have a target go into shutdown mode. But we charged the batteries, charged the batteries. We made sure that the ship crew stayed safe. We worked very closely with the Navy. So the USS John Finn, a new construction, integrated and air missile defense ship, could go out and execute that mission. That same ship participated in the last GMD test and tracked the ICBM.

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

Let me shift out to Europe, Aegis Ashore Poland. This has been a tough one. For the last couple of years we have told you we were at 90 percent construction completion. Today I going to tell you we are at 90 percent or more construction completion. But the great news, within the last couple of months, through the pandemic, you saw that in Europe, we managed to raise the four spy radar rays, put them in place as a forcing function to construction. We
also put up the fire control director. That is really
great. Now we are ready to do install and checkout for the
Aegis Combat System. Very important work.

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

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

Let me switch to Guam. PB 2022 includes funds for the
initial development of a survivable and operationally
effective IMD for Guam, and those capabilities that I have
talked about, regional from Aegis, and what I am going to
talk about in just a second in THAAD, are all part of that
architecture consideration today, and we are working that
hard so that we can come forward and tell you exactly what
we are going to do on Guam. Staying very close to
INDOPACOM.

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

So I will wrap up by saying a little bit about
technology, investing in innovative and disruptive
technologies to address the emerging threats, including
regional, layered hypersonic and cruise missile defense
capabilities. Space sensors, land- and sea-based sensors, networked through the Command and Control Battle Management System set the stage for hypersonic and cruise missile defense capabilities, and thank you. I appreciate everything that you do for this committee, and thank you for your time today.

[The prepared statement of Admiral Hill follows:]
Senator King: Thank you very much, Admiral. This subject gets more and more complicated the more we get into it, because I think when we talk about missile defense it is important to emphasize we are not only talking about Fort Greely and Vandenburg. We are talking about THAAD, Patriot, and Aegis.

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

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

Admiral Hill: We have terminal capability today.

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

Admiral Hill: And that is typically where you will start on taking on that kind of threat. It happens to be in the hardest environment. You are in the atmosphere. You are maneuvering. But we do have that capability deployed today, and we are continuing to improve it.
Where we need to go is to take it out in that glide phase, and that is the Glide Phase Interceptor that you will see in the PB 2022 budget.

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

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

Senator King: Thank you. It is being considered.

Admiral Hill: Yes, sir.

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

General VanHerck: Chairman, that is correct. I did say that. There are lots of data from domain awareness sensors around the globe that all too often is not shared to develop a globally integrated picture that would give us the ability to get further left and give decision space to our senior leaders.
Senator King: I completely agree, and as you know, Goldwater-Nichols was a landmark statute which led us to joint commands. But we do not necessarily have joint data access and capability development. So I hope that is something we might be able to address. But when one of our generals says he has to pry the data out of another agency in order to do his job, I think that tells us we have got a problem we should address.

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

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

Admiral Hill: Well, for the ballistic threat, the GBIs today and the NGIs tomorrow go after that threat. They are spec'ed for that. NGI, as you know, it has got a hard requirement on it. It is to cover all 50 states. That is
why it is a 50-foot missile and 50-foot in diameter. It has
got a hard requirement on it. I would rather have more GBIs
and NGIs against that threat.

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

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

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

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

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

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

[Laughter.]

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

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

Senator King: I think that is something we can follow up on. Thank you very much.
Admiral Hill: Yes, sir.

Senator King: Thank you all. Senator Fischer.

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

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

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

Ms. Tomero: I am looking forward to it.

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

Ms. Tomero: Yes, absolutely. The Department is working that request, and as Admiral Hill said, we look forward to working very closely with Israel as one of our closest partners. And so the Department is working that request. What I can do is, because it crosses over several
Senator Fischer: Okay. I would like to know if it is going to be a request for supplemental appropriations or if it is going to reprogram resources.

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

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

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

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

Senator Fischer: Will it be standalone?

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

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

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

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

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

Senator Fischer: I am going to put General VanHerck on the spot, and Admiral Hill. What do you think? Do we need a designation like that?
General VanHerck: Senator Fischer, I do believe it would be best to have a single entity designated within the Department for cruise missile defense of the homeland.

Senator Fischer: Thank you. Admiral?

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

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

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

So what we are doing -- I do not like to live off of plus-ups. I always appreciate when Congress does that, but then now we are committed to include that in the budget, so you will see us including that in PB 2022 as we move
forward. And that PB 2022 look into NGI, absolutely. We are in a good place with both contractors moving out to beat the government estimate of first emplacement in 2028.

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

Senator Fischer: Good to hear. Thank you.
Admiral Hill: Yes, ma'am. Thank you.
Senator King: Senator Rosen, via Webex.

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

I would like to go right into some missile defense cybersecurity issues. As MDA works to rapidly deploy missile defense systems to, of course, stay ahead of threats, I am concerned that we may not be taking potential cyber vulnerabilities seriously enough before we field new systems, when the 2019 Missile Defense Review software is mentioned, only once, and even more alarming, GAO's May 2021
report highlights that none of MDA's 17 operational
cybersecurity tests planned for fiscal year 2020 were
conducted, and that cybersecurity testing since 2017 has
revealed several vulnerabilities.

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

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

I absolutely agree with you that it is something we
should worry about. When you look at a system as networked
as missile defense is, 18 time zones, tying all the sensors
together, fusing data, absolutely. I want to know where
those vulnerabilities are, so when we execute those tests we
take action on them. You can see it in our budget exhibits.
You will see cybersecurity across every single element of
the missile defense system, and you will see that we are
martialing the best people on the planet to execute those
adversarial assessments and the persistent cyber operations.

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

I would like to move on now and build on Senator
Fischer's question about the Iron Dome. So Ms. Tomero,
given the U.S. Army's acquisition, of course, of the Iron
Dome technology, what lessons do you think that you have
learned, or we have learned from the recent Israel-Hamas
conflict, and more specifically, are you concerned about the
ability of hostile actors to launch a massive barrage of
rockets designed to overwhelm these short-range missile
systems? And Ms. Tomero and General Karbler, you can both
respond. Ms. Tomero, you can go first, please.
Ms. Tomero: Thank you. Again, there has been a lot of continuity and support for cooperative missile defense with Israel and supporting Israel's ability and capacity to defend itself, and we will continue to do so. And my understanding is, according to Israel, their success rate is very high.

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

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

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

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

Senator King: Thank you, Senator. Senator Cramer.

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

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

    General VanHerck: Senator, thank you. As we look at our competitors and potential adversaries, they have developed capabilities to hold the homeland at risk, below the nuclear threshold. Those capabilities that they have developed now are extremely long range. So, for example, Russian capabilities to launch cruise missiles now extend to over Russia, that can threaten North America. They can also
do that from very far ranges, from our 2:00 towards Europe, and the same thing in the Northwest as well.

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

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

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

General VanHerck: I would have to defer to the Service on that one. I am not sure what those next steps are. For us it would be to get the additional funding here, which is $25 million, to move forward to fast-track site development and those kinds of things. As far as test of the actual system, I would defer to the acquisition authority on that one.
Senator Cramer: All right. Thank you. That is everything, Mr. Chairman. Thank you.

Senator King: Senator Kelly.

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

Admiral Hill: SM-6 based.

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

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

Remember, I am the technical developer. There is
nothing that I see that causes a constraint on where the
destroyer or the cruiser might operate in order to protect
the carrier. It is just part of the other many missions
that that strike group is going to carry out.

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

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

When you bring in offboard sensors, which is a proven
fact with Aegis, we have done launch on remote, which means
we are launching on that remote sensor, and we have done
engage on remote, where the ship never sees it with its own organic sensors. It is just controlling the missile and giving in maneuver commands as it is taking data from another radar.

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

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

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

Admiral Hill: Yes, sir.

Senator Kelly: General VanHerck, yesterday we were talking a little bit about cruise missile defense of the homeland, and in the $247.9 million budget to support development of hypersonic defense capabilities, I believe
there is about $14 million in there, or there is a requested $14 million for cruise missile defense of the homeland.

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

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

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

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

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

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

[Laughter.]

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

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

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

Senator Sullivan: Correct. And I also watched the Chairman's discussion of deterrence, and I think it is
questionable whether Kim Jong-un is a rational actor. I definitely think it is questionable whether the Ayatollah is a rational actor. And I think it is the responsibility of this Congress to make sure we do not place that bet on deterrence. The whole idea is if either of them want to go out in a blaze of glory, we shoot down all their missiles, and then we destroy their countries. But we don't get destroyed first. Isn't that the whole point of our missile defense?

Admiral Hill: I will defer to Policy.

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

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

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

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

Senator Sullivan: Let me ask another question. So the history, unfortunately, of missile defense -- and I do not
want to be too partisan here, but typically Republican administrations have supported it, Democratic administrations have not. We made a good breakthrough in this committee. In 2017, my bill, the Advancing America's Missile Defense Act, had 20 Republican co-sponsors, 10 Democratic co-sponsors. So missile defense has become bipartisan, which is really, really important to make it sustainable.

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

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

Admiral Hill: Senator, thanks. Great question. First, I will agree with you that missile defense should always be a bipartisan issue.
Senator Sullivan: Yep, and we have made good strides in that regard.

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

Senator Sullivan: So the budget.

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

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

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

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

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

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

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

Senator King: Thank you. Senator Tuberville.

Senator Tuberville: Thank you. General VanHerck, if the NGI development is delayed, do we have a good backup
plan, or are we going to fall so far behind we cannot catch
up?

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

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

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

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

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

[Laughter.]

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

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

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

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

Senator Tuberville: Wow. Does NGI involved with the threats we are seeing build from North Korea and other malign actors, will we be prepared?
Admiral Hill: With NGI I believe we will be prepared, and I think the reason why, if you take a look at what the intelligence sources tell us, the first intelligence, we know that those threats are not going to just be unitary, single-shot devices. They are flying with countermeasures, they are flying with multiple re-entry vehicles, multiple maneuver vehicles. So the NGI answer to that, and having two companies, two great American companies, moving forward and competing against each other to beat the timeline and to reduce the risk in the program, we are going to come forward with a capability that has multiple warheads on it, that can reduce the shot doctrine.

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

Senator Tuberville. Thank you. That is all.

Senator King: I want to thank you all very much. Thank you for your service and for your dedication to this complex, difficult, and important mission. Thank you for your testimony here today, and I will make the same statement I did to the prior panel. If there are thoughts
that you have that you think would be helpful to us, please 
supply them to the committee between now and the beginning 
of next week.

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

Thank you. The hearing is adjourned.

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