

**Transcript of
Senate Armed Services Subcommittee on Strategic Forces Holds Hearing on Defense Department
Nuclear Acquisition Programs and the Nuclear Doctrine**

June 7, 2017

Witnesses:

James Macstravic, Deputy Assistant Secretary of Defense for Tactical Warfare Systems
Dr. Robert Soofer, Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy
Gen. Robin Rand, Commander, Air Force Global Strike Command
Navy Vice Adm. Terry Benedict, Director of the Navy's Strategic Systems Programs (SSP)

FISCHER: My Apologies. Good afternoon. The hearing will come to order.

The Subcommittee meets today to receive testimony on nuclear doctrine, strategy and acquisition programs of the Department of Defense. This will be our final hearing in this Subcommittee before the full Committee conducts its mark-up of the FY 2018 National Defense Authorization Act later this month.

I would like to express my thanks to Senator Donnelly and to the staff for the hard work that they have done. This is has been a bipartisan effort based on the firm commitment both sides share in sustaining and modernizing our nuclear forces.

On this Committee, there is strong bipartisan support for nuclear modernization based on the obvious wisdom of not letting our systems age to the point of unilateral disarmament. As President Obama stated in his 2009 speech in Prague, "Make no mistake, as long as nuclear weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary and guarantee that defense to our allies."

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

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

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

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

With that, I recognize the Ranking Member, Senator Donnelly, for any opening remarks that he would like to make. Senator Donnelly?

DONNELLY: Thank you, Madam Chair. And I want to thank our witnesses for testifying today. It's good to see so many familiar faces.

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

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

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

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

As we face an increasingly complex global nuclear environment, I think Secretary Carter was absolutely right when he called our nuclear deterrence the bedrock of our national defense.

I look forward to today's hearing as an opportunity to hear about the successes and the challenges faced by the Department and how we can best support your efforts, strengthen our deterrent, and protect our beloved country. Thank you again.

FISCHER: Thank you, Senator Donnelly.

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

General Rand, if you would begin, please.

RAND: Chairman Fischer, Ranking Member Donnelly, and distinguished members of the Subcommittee, thank you very much for allowing me to appear before you today to represent the men and women of Air Force Global Strike Command.

I've testified several times for this Subcommittee and I'm looking forward to speaking about the progress and the changes that have taken place in Air Force Global Strike since our last meeting.

My priorities for the Command remain the same. They are Mission, Airmen, and Families. We exist to serve the nation by providing strategic deterrence and global strike in a world that's continually changing and challenging the status quo.

Modernization of the nuclear force is mandatory. Fiscal constraints while posing planning challenges do not alter the national security landscape or the intent of competitors and adversaries, nor do they diminish the enduring value of our long range strategy forces to our nation.

If we're to maintain or in some instances regain the strategic lead we have on our potential adversaries, we cannot delay this modernization.

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

FISCHER: Thank you, sir.

Mr. MacStravic, please.

MACSTRAVIC: Chairwoman Fischer, Ranking Member Donnelly, Senator Grassley (ph), thank you for the opportunity to testify on the Fiscal Year 2018 budget request for nuclear forces.

I am pleased to join General Rand, Dr. Soofer, and Vice Admiral Benedict to discuss the Department of Defense's number one mission -- maintaining and modernizing a safe, secure, and effective nuclear deterrent.

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

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

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

The NPR will look at all elements of U.S. nuclear forces, policy, and posture to ensure that our nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to meet 21st century threats. The Department appreciates Congress' support in ensuring the credibility and reliability of our nuclear deterrent in an increasingly complicated and challenging world, and it is essential that Congress continue this support for the President's FY 2018 budget request for nuclear deterrence forces.

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

Delaying modernization and warhead life extension efforts would degrade the effectiveness of these systems and would put at risk the fundamental objective of these systems -- nuclear deterrence. As our delivery systems and warheads reach their limits for sustainability, our choice is not between keeping or updating our forces, rather, our choice is between modernizing those forces or watching a slow and unacceptable degradation in our ability to deter adversaries who present existential threats to our nation.

Because all of our systems require modernization at the same time, we need continued support from Congress to ensure adequate, consistent funding for these programs. As the DOD moves forward with recapitalization of all three legs of the Nuclear Triad and investment in the resilience of the NC3

architecture, the total cost to sustain the existing force and field a modernized replacement is projected to range from approximately three percent to six percent of total defense spending annually.

This projection includes the total cost of the strategic delivery systems that have a nuclear-only mission, a portion of the cost of the B-21 bomber, which will have both conventional and nuclear roles, but no longer includes nuclear warhead life extension efforts that are funded by DOE/NNSA.

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

I want to take this opportunity to thank the Committee for its support of the budget in FY 2017. I look forward to your continuing support in FY 2018. Thank you again for the opportunity to testify. I'm happy to answer any questions you may have.

FISCHER: Thank you, sir.

Next, Dr. Soofer. Welcome back. It's good to see you.

SOOFER: Thank you.

Chairwoman Fischer, Ranking Member Donnelly, distinguished members of the Committee, thank you for the opportunity to testify on the President's Fiscal Year 2018 Budget Request for Nuclear Forces and thank you for your kind words.

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

For decades, U.S. nuclear forces have provided the ultimate deterrent against nuclear attacks on the United States and our allies. Nuclear weapons remain a foundational element of U.S. strategy for deterring strategic attacks and large-scale war and for assuring U.S. allies. Effective deterrence requires a deliberate strategy and forces that are structured and postured to support that strategy within the existing security environment.

Strategy, forces and posture must also be flexible enough to maintain stability while adjusting to both gradual and rapid technological and geopolitical changes. Recent years have indeed brought changes that the U.S. policy must address.

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

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

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

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

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

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

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

FISCHER: Thank you very much.

Admiral Benedict, welcome.

BENEDICT: Thank you.

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

My written statement which I respectfully request be submitted for the record addresses my top priorities in detail.

I would like to briefly address the long-term sustainment the sea-based leg of the Triad. While our current life extension efforts will sustain the D5 system until the 2040s, the Navy is already beginning to evaluate options to maintain a credible and effective strategic weapons system to the end of the Columbia Class service life in the 2080s.

I remain strongly committed to the concept of intelligent commonality and the sharing of information with the United States Air Force as a method to reduce cost and risk. At SSP, we will continue to look long-term and across the spectrum from our work force and infrastructure to our industrial partners and our sister services and to our geographic footprint in order to maintain our demonstrated performance.

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

FISCHER: My thanks to all the panel for your opening statements.

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

RAND: Ma'am, the short answer is no. Our analysis is over the 50-year life span of GBSD, it'll be \$159 billion and the slep (ph) of the current Minuteman III during that same period would be \$160.3 billion. It's a \$1.1 billion difference. So, just simply from financial, there's no benefit there.

FISCHER: OK. Let's address some other reasons then beyond the cost. Why the current system cannot be extended past that 2036 date? Why do you think that?

RAND: A very good question and thank you for the opportunity. I boil down deterrence, to me, it has to have three elements to it, to deter the weapon that you use need to be reliable, the weapons that you use need to be able to be survivable and get to the target they're intended for and destroy the target, and, three, there has to be will.

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

So, if we came up with 21st Century technology for a missile that we're replacing and we are going to use 1970s and '80s technology for command and control of that, it will be very technically difficult to do and it'll be very expensive to do. So, those are the simple reasons. This is a wonderful system that has now reached its retirement.

FISCHER: And we have to look to the future on what's going to keep us safe, correct?

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

FISCHER: OK. Thank you, sir.

And, Dr. Soofer, components of the modernization program laid out by President Obama, they often criticize it as propagating Cold War era thinking. And they point specifically to his decision to retain the Triad as evidence of this. General Selva who's the Vice Chair of the Joint Chiefs, he responded to this argument earlier this year in testimony before the House Armed Services Committee and he noted that the Triad had been examined by the Joint Staff three times in the last five years and each evaluation resulted in the same conclusion that we need to retain the Triad.

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

SOOFER: Thank you, Senator. You're absolutely right. This is what the previous administration had found. We are in the process of reevaluating that as well in our Nuclear Posture Review. But I think it's safe to say that the Triad will remain the basis of our policies going forward. We have at least three fundamental roles for nuclear weapons that have endured since the days of the Cold War and the post-Cold War period, and that is to deter nuclear attack, to help deter large scale aggression, and to assure allies.

And to do that, we have relied on a Triad of forces to provide the flexibility to do that and also to ensure survivability against potential changes in the geopolitical environment or technology or the adversary being able to -- say, be able to take out one leg of the Triad or two legs of the Triad. If you have three legs, it becomes much more difficult for them to even imagine launching a first strike against U.S. forces.

FISCHER: For your personal opinion, do you believe we're on the right path with regards to geopolitical changes that we're seeing in the world right now?

SOOFER: We've already begun the analysis in the Nuclear Posture Review. We started out with a look at the strategic environment, what has changed since 2010. And the differences are vast, just to begin with, Russia becoming a great power adversary.

The other conclusion that we're quickly coming to is that despite the fact that Republican and Democratic presidents since the end of the Cold War have been trying to reduce reliance on nuclear weapons, other countries are going in the other direction. Russia, China, North Korea, other countries, they're increasing reliance on nuclear weapons. And so, we have to take that into account in the way we evaluate our future nuclear requirements.

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

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

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

FISCHER: OK. Thank you.

Senator Donnelly?

DONNELLY: Thank you, Madam Chair. I want to start -- I pressed the wrong button.

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

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

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

We did that and then we went to a Life of Type in the shortest period that we could fiscally afford within the program in order to optimize the infrastructure that existed today. We drew extensively from the

experience and expertise and talent pool that exists at Crane as part of the Naval Surface Warfare Center to optimize that. And then, in support of the Air Force as they started their GBSD competition, we provided the United States Air Force the entire radiation-hardened electronics database that we built through the Navy's Life Extension Effort as a means to jumpstart that effort within the Air Force and avoid -- cost avoid the Air Force's efforts to reconstitute that from scratch.

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

DONNELLY: Mr. Macstravic, I'd love to hear what you have to say. OK. Is there more?

MACSTRAVIC: There is more. So, you're talking -- sir, you're talking about a systemic problem.

DONNELLY: Yes.

MACSTRAVIC: Access to secure, trusted, and radiation-hardened microelectronics is a critical requirement for both the Department of Defense and the Department of Energy. The FY2018 President's Budget has a down payment on making sure that the nation has an assured supply of advanced electronics, fostering a next generation of both strategic and nonstrategic weapons. I believe it's going to take a rather long time for us to ensure that we have a robust infrastructure, but we are paying particular attention to both near term shortfalls and the availability of components and the long-term availability of the core technologies we're going to need to be able to dominate this war space.

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

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

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

SOOFER: Yes. Senator, this would just be my personal view.

DONNELLY: Yes.

SOOFER: Again, we'll be evaluating this in the context of the Nuclear Posture Review. So, commonality can be helpful if it saves money, but if you have too much commonality and something goes wrong with a common part, then you're opening yourself to a potential vulnerability in the...

DONNELLY: How about the coordination of acquisition strategies so that we can maintain some of this critical locations?

SOOFER: May I turn that over to the acquisition expert?

MACSTRAVIC: Sure. So, the short answer is yes and in fact we are doing that. The acquisition strategy for GBSD is predicated on a wide rep of information that was available provided by the SSP and informed all potential offers on opportunities, technological as well as material for enhancing commonality, reducing cost and improving performance.

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

So, in addition to making sure that there's mutually forming acquisition strategies, my office ensures that acquisition execution doesn't accidentally create gaps and capability or systems.

DONNELLY: General, I was going to ask you the same, but I'm almost out of time. So, I want to ask you something else.

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

RAND: Thank you, Senator. I think it's one of my top priorities that I would like to pursue with the Department of the Air Force and that I am. There's many benefits to this, strategic and tactical and operational level. The biggest one is we'll have a 30 percent efficiency and increased time on station. That would reduce significantly our requirement for tankers and they could be used by other airplanes that need the tankers.

Also, if we used, re-engine the engines today, typically have a lifespan of 40, 50 years where you can mount them and not take them off the wing again. That would reduce our manpower requirements that we spend quite a bit of time in the sustainment of the engines with the -- as faithful as the TF-33 engine's been, it takes a lot of people and a lot of maintenance to keep it airworthy. And I think that for those reasons and the fact that we are going to be flying the B-52 out to 2050, I think there's a lot of value into assessing this.

DONNELLY: Thank you.

Thank you, Madam Chair.

FISCHER: Senator Peters?

PETERS: Thank you, Madam Chair for holding this hearing and to our witnesses, thank you for your testimony this afternoon, certainly do appreciate it.

Dr. Soofer, I'd like to ask about the ballistic missile defense review in particular and the environmental impact statements that are being conducted by the Missile Defense Agency. My understanding is that the environmental impact statement is very far long in the process if it hasn't already been completed which it may have and it was due to be released last year, actually.

However, Deputy Secretary Work informed the Armed Service Committee that because the topic of a potential future interceptor site will be addressed in the review, the Department will hold off on making a designation of a preferred site for our continental U.S. interceptor site. As you know, the EIS was required in the FY13 NDAA. So, if a decision is made to move forward with the interceptor site, the

initial environmental review is already complete, and I believe the findings of that EIS would be very helpful and very useful in informing the review about the potential cost of environmental mitigation on those sites.

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

SOOFER: Senator, I don't know why it cannot be released. I will take that back for action. You are correct. It has been completed. You're also correct that it's going to be factored into the ballistic missile defense review to see whether we even need an East Coast missile defense site. But if I can get back to you, sir, I'll find out why it cannot be released or it can be released to get it to you as soon as possible.

PETERS: Well, I appreciate that if you could do that. And I appreciate that it's going to be considered in the overall review in the assessment. If I take that a step further, will the assessment use -- utilize the findings on a potential site? I'm looking at a potential site that may be the lowest cost or at least impacted that that will be a significant factor in which site is selected.

SOOFER: Senator, I think at the level of the BMDR, we will ask the question whether we need an East Coast site, how many interceptors we might need. But the determination of where that site would be may not be considered at the level of the ballistic missile defense review.

PETERS: Right. So, it'd be at the next level and as you are evaluating specific sites.

SOOFER: Exactly right.

PETERS: But it's a part of the broader review. So, obviously, it's a critical component of the overall decision that will be made both as a general policy and then specific to sites I assume.

SOOFER: Yes, sir.

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

SOOFER: Thank you, Senator. The administration has concluded that the current situation is not sustainable. It is a violation and we need to do something about it. The National Security Council is reviewing steps to place more meaningful pressure on Moscow both in terms of diplomatic and military measures to return them to compliance.

Meanwhile, the Department of Defense is reviewing military response options and framing this violation, this capability, again, in the context of the Nuclear Posture Review. What does it mean? Why is Russia doing this? So, for instance, we know that Russia already has air-launched cruise missiles and sea-launched cruise missiles that can range similar targets in Europe. So, the question is why go forward? What is it that the military capability that Moscow derives from this?

And we come to the conclusion that there must be some military capability that outweighs the political repercussions of actually violating the INF Treaty. So, for Russia, this has a meaningful military capability and we need to assess what that is and how to address it.

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

SOOFER: Senator, I don't have a timeline for it to be honest with you.

PETERS: But, do you think it's important to do it sooner rather than later?

SOOFER: I believe it is. Yes, sir.

PETERS: And that it is a priority now as far as being under review?

SOOFER: It is a priority. It definitely is a priority. The National Security Council as I say has already begun the process. They're well into the process, I should say.

PETERS: Because I think it's important to -- and I agree and now it's my belief, too, that the sooner is better.

SOOFER: Yes, sir.

PETERS: And we have concern with our allies now who are wondering where the United States' posture will be not just on nuclear deterrence, but where we are in defense of Europe as well.

SOOFER: Right.

PETERS: Taking some -- or some concrete actions would be very important. And I guess at least to my final point is that in my concern with how NATO allies in particular see the United States, certainly, Secretary Mattis has been very clear I think in U.S. support of our NATO allies. He has also been very clear that we need to have strong allies, that you can't be a power without having a lot of good friends around you as well.

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

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

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

PETERS: Thank you so much. I appreciate it.

Thank you, Madam Chair.

FISCHER: Senator Sullivan?

SULLIVAN: Thank you, Madam Chair. And, gentlemen, thank you for your testimony here.

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

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

I also want to talk about missile defense and, Dr. Soofer, I'm glad that you're there. I know your background. I know how much experience you have on the issue. You may have seen two weeks ago a number of us, including Senator Peters and I, introduced a comprehensive Advancing America's Missile Defense Act. And before I want to ask a couple of questions about some of the elements of that, can you give the committee here a sense of the increased threat that we're seeing right now with regard to North Korea?

There's been plenty of open committee testimony, unclassified, saying it's no longer a matter of if, but when North Korea is going to have the capability to have an intercontinental ballistic nuclear missile that can range not just Alaska and Hawaii, but Detroit, and New York, and Chicago, and L.A. Give us a sense of how you're viewing that threat and I know you can't talk about timelines, but I think it's safe to say our intel community has consistently underestimated what they're doing particularly with all his testing.

Can any of you give us a sense just how real that is?

SOOFER: Senator, thank you. I would just repeat what the intelligence community says. North Korea is poised to conduct its first ICBM flight test in 2017. I think that...

SULLIVAN: And they've already launched the satellites. So, they have the ability to fire an ICBM essentially. Isn't that correct?

SOOFER: Exactly.

SULLIVAN: And so, all they're missing is the reentry vehicle for a nuke, in terms of the capability?

SOOFER: They have actually -- their most recent test demonstrated a capability to, I think, they made further progress in their ability to develop reentry vehicles in their last test.

SULLIVAN: So, that's another troubling development, right.

SOOFER: And so, again, we're going to have to factor all this in the ballistic missile defense review. But, in addition to what you've seen in the open press, the classified information I think is even more dire. I mean, there's no question about it.

And so, the question for us as we conduct the ballistic missile defense review is what does it all mean and what can we do, what are the potential options for addressing the threat.

SULLIVAN: Our goal is to make sure that the members of the Senate who are on the bill that we introduced two weeks ago is to make sure that whoever us in the White House has kind of a strategic time that if and when he has this capability, we can announce to North Korea, "Look. You try to shoot one or

two or three, you want to go out in the blaze of glory, we'll shoot that down. We have the 99 percent capability."

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

SOOFER: Senator, I think that we have a measure of protection today against the North Koreans.

SULLIVAN: But don't you think we can always enhance it given that the threat has increased?

SOOFER: The pace of the threat is advancing faster than I think was considered when we did the first ballistic missile defense review back in 2010.

SULLIVAN: So, some of the key elements of the bill that we introduced are more GBIs, more advancing in terms of the acceleration of multiple kill vehicles on top of those GBIs and an integrated layered sensor system that would make sure all of our different theater THAAD, theater Aegis, Homeland back here in America is integrated where we have an unblinking eye with regard to sensors, not only ground based, but in space. Do you support those three pillars of how we're looking at missile defense?

In your personal opinion, I know you're doing a review. But you're also someone who's got a lot of knowledge on this issue.

SOOFER: Senator, I do support those personally and I think it's based on an approach that was outlined by the previous administration and enjoys support here in the Congress and I think it makes imminent sense. So, the only question now is based on how we understand the projected threat, whether that's enough.

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

SOOFER: Senator, I support the President's budget.

SULLIVAN: Good answer. I'm sure you have to answer that way. I don't think it does enough. So, I think we need to do more.

Let me ask one final question and it goes back to Senator Peters. As we're thinking about missile defense, we have THAAD. We have Aegis in the Asia Pacific. The President talked about maybe a THAAD maybe in Saudi Arabia. Can you give us a sense of -- and again, I know this is what Senator Peters asked, but I think it's a really important question. How do we start to incorporate thinking of protecting our homeland?

The President talks about America first. I think we need America first on missile defense. But protecting our homeland in a way that integrates the usefulness and the knowledge we have from our allies. For example, the Israelis as you know in the NDAA every year, we've been very supportive of Iron Dome, but in some ways, they have technology and they've advanced in ways that could probably help us. How do we need to look at integrating our alliances with protecting not only our allies, but protecting our homeland with our allies?

SOOFER: Senator, that's a key issue for the ballistic missile defense review. That's exactly what we're going to be looking at. And I think everything that you proposed makes great sense. We have to do that and we also have to ask the question whether the allies could do more as well on their own to provide protection. And so, all of these factors will be weighed and I hope we can continue a dialogue on this as we move forward on the ballistic missile defense review to get your views and other senators as well.

SULLIVAN: Great. Thank you and congratulations on your new position. I'm glad you're in that position.

SOOFER: Thank you.

SULLIVAN: Thank you.

FISCHER: Senator Warren?

WARREN: Thank you, Madam Chair, and thank you to our witnesses for being here today.

I want to ask some questions about the Nuclear Command, Control and Communication System, the NC3. I know it's actually 62 separate systems that involve everything from radios on the ground to systems operating on Air Force 1 and I also know that NC3 is critical to making sure that the president can communicate with commanders even if the United States is under a nuclear attack. So, obviously, security and resiliency are key components here.

So, General Rand, as the head of Air Force Global Strike Command, you're the one who's in charge on this, how would you describe the age and health of the NC3 system today?

RAND: Ma'am, the system was allowed to atrophy or did atrophy over the last 25 years. There's no denying that. We've owned up to that I think as a nation. And the first thing you have to do is admit that and then you have to identify and as you mentioned, there's actually 107 subsystems...

WARREN: Yes.

RAND: ...of which the Air Force maintains 62 of those, of which is 70 percent of the NC3 budget. So, the first thing we did as we started this journey a little over two years ago of what is NC3, and we've identified in a very thorough way the systems. Then, we've analyzed the health of each of those systems and that's ongoing. Some of them are obsolete. They need to be replaced. Some need to be upgraded.

We are doing those things. But we didn't get here overnight and we will not fix NC3 overnight. But we are on a good path. And so, I would tell you where we are today and ironically, I just had what we call an NLCC/NC3 Council that I Chair with my fellow four-star Major Command commanders yesterday and we're at least now able to identify and have a healthy discussion about what we need to do to fix some of these things. We wouldn't have been able to do that two years ago.

There's good things on the horizon. We're about to close the deal on getting the presidential national voice capability -- conferencing capability, long overdue. We are getting very close to the family of beyond line of sight. It's called FAB-T terminal along with the Force Element terminal that will go on our bombers and tankers that will give it an increased receive capability if they're ever getting messages as we're approaching anything to do with a nuclear escalation. These are some very meaningful things.

We're standardizing across our command posts in our operation centers, the ground base terminals and radios for us to use. It's called Global Ascent. So, there's many things that we are moving out on and

making improvements on. So, we're in a far better place than we were. I will assure you this has the top level attention in the Department of Defense.

WARREN: Good. And so, when General Hyten says "This is top priority for me," you're all on board for that.

RAND: Ma'am, I couldn't have told you what NC3 was two years ago and now, I dream about it.

WARREN: OK. And this means we're getting better, right?

RAND: We periodically now -- we brief ATNL and the Vice Chairman.

WARREN: Right.

RAND: And those go directly to the Deputy SecDef and SecDef. This is a priority of the Secretary of Defense.

WARREN: Can I ask you a question on that about priority and I'm very glad to hear this and hear the changes that you're making. I want to ask a slightly different question about urgency.

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

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

WARREN: Yes.

RAND: In the nuclear enterprise, this is one element of it that we have allowed things to get to the point where we don't have the margin of error.

WARREN: OK, all right.

RAND: That's why I'm here. That's why this modernization effort is so important because any slack we had has been eroded.

WARREN: All right. It's at least helpful to know, I should say. If we don't know, we can't change it and you've got to come to us and let us know how we can be helpful.

I want to ask a question from a little different angle, too. You're the primary customer for NC3. You set the requirements. I know your staffed up now to do this. But Air Force Materiel Command is responsible for actually acquiring the systems to meet your requirements. So, when General Hyten was here recently, he said that he was concerned about staffing gaps...

RAND: Yes, ma'am.

WARREN: ...on the acquisition side of the NC3 program. So, let me ask you, General Rand, what's the Air Force doing in this budget to address the acquisition challenges associated with NC3?

RAND: Thank you for that. I am in very close cahoots with my dear friend, Ellen Pawlikowski, who's the commander of Air Force Materiel Command. And yesterday at our council meeting, two issues came up,

the funding for the FAB-T -- it's called that Force Element Terminal and for the programs that we have, many of the programs, is to make sure that we have the people that can manage those programs from cradle to grave.

And we are going to the Air Force to discuss now how we can get the manning and where those gaps exist. But we've come a long way again in the last year. And now, the civilian hiring freeze slowed us down a little bit, but we've got reprieve from that. I've been able to bring in additional 235 people to the Air Force Global Strike to work...

WARREN: 235?

RAND: Yes, ma'am. We stood up -- one April, we stood up the NC3 Center at Air Force Global Strike and Ellen working -- and for the first time, we have an NC3 program manager at Hanscom Air Force based in Boston and we've identified what she needs. We need to do a full court press to try to get an additional 50 to 60 people to help with the nuke weapon center and the NC3 portfolio, and there's a variety of programs that we need to man up and we're going to do it.

WARREN: Good. Well, I appreciate the work you're doing. I'm out of time now, but I'm going to send some questions for the record to Mr. Macstravic and just about your role in helping out on this. I'm glad you're making this a real priority and understand the urgency and if we can be helpful, I hope you will let us know on this. It's important.

RAND: Thank you very much. I appreciate your support.

WARREN: Thank you, you bet. Thank you.

Thank you, Madam Chair.

FISCHER: Thank you.

(Inaudible)

COTTON: Thank you, gentlemen. Thank you for your testimony today.

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

RAND: Sir, we need to develop emerging technologies and that's why I'm a huge proponent for GBSD. Before you came in, I had mentioned there's two aspects to deterrence, reliability which we own, and the weapon survivability which the enemy gets to vote in and we need to do some things that we will not be able to do with existing systems to ensure that the weapon will get to its intended target with the intended effect that we have. And that is the essence of why we need GBSD.

So, what we need to do is to pursue this acquisition strategy and stay true to course and field this capability by the time that we need it, it's 2030, because that's when I see this big closure of the technology gap that we had the benefit of having for many decades is getting smaller and smaller. And if we don't do something, that gap will close.

COTTON: And you say there are things we need to do when we need to complete this acquisition strategy, could you be more specific about that?

RAND: Well, yes, sir. I mean, we're on track. I mean, right now, we're going to down select the two companies to go for GBSD this summer, to go into the TMRR, the Technological Maturity Risk Reduction. This is the process. And in three years, we'll down select to the company. We're on track with the strategy.

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

COTTON: So, these specifics, that would ensure our reentry vehicle or survivable in the GBSD world as compared to today's world if you'd like to discuss in a classified setting.

RAND: I would need to do that. Yes, sir.

COTTON: I understand. Since we're on GBSD though, I understand that one option of it is under consideration is moving operations into an integrated command center. So, you'd just have one building on base that hosts missile crews, maintainers and security forces. That would mean instead of having 15 cruise on alert in a missile field, you'd have six, seven, or eight on alert. This concept is a direct result of the RFP mandating a reduction in operations and sustainment costs.

No doubt the missileers would appreciate not having the two-hour drive out to the launch control centers and I know that we got to look for places to trim costs in this budgetary environment. But the large number of command centers and facilities in the three missile fields are in fact a real irritant to enemy planners and I'm concerned that this setup might give adversaries one target instead of multiple targets, freeing up some of their forces to strike other military significant targets or even target American cities.

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

RAND: Yes, sir. I think that's a fair question. I think that these would be moderate improvements and that wouldn't take away from complicating the enemy's targeting. There still would be a lot of launch facilities they'd have to be accountable for and I think that we would still give them a targeting problem.

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

COTTON: Thank you.

Dr. Soofer?

SOOFER: Sir.

COTTON: Congratulations on your new position. Our committee's loss is the country's gain. I'd like to talk briefly about satellite doctrine. Decades ago, we had satellites that were oftentimes single missile satellites and there's an understanding that if a sensor was nuclear designated that the United States might take it as a precursor to a nuclear strike if there's any effort to impair or destroy that satellite.

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

SOOFER: Sir, space actually is not in my portfolio.

COTTON: But you're very smart on nuclear doctrine and I think nuclear doctrine is...

SOOFER: One of the key things we'll be looking at in the Nuclear Posture Review is potential vulnerabilities to the U.S. nuclear deterrent. And so, we'll be examining that very issue.

So, if the enemy -- if the adversary can blind our indications and warning to an attack, that's a big deal, and one way that we do that of course is through satellites. And if the satellites were vulnerable, we have to figure out some way to compensate for that and de-aggregating, spreading assets around makes a lot of sense. There are other ways of doing it.

I remember many years ago, we had a concept called operationally responsive space where we had small satellites in the barn and if our main satellites were taken out, we could immediately launch new capabilities. So, I think all these points will be addressed as part of a broader national defense strategy, but the key point about vulnerability of our indications and warning will be something that we will look at carefully in the Nuclear Posture Review.

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

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

HEINRICH: I'll just start for the record and mention that ORS is doing quite well and I think this year, their budget actually reflects the direction and trend that we've all seen coming for quite some time and I'm excited about that progress.

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

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

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

That is proven to be, I would say, the example. I think when General Rand and I talk about commonality and inter-service support, I think the ALT 370, that fuse effort is the sort of model that I look to. We have made accommodations within our reentry body as has the Air Force in order to develop sort of a tiered

approach. So, there are components within that device which are absolutely common and will be utilized exactly in the Air Force program. There are components in there which are adaptable based on the fact that our reentry body flies on a Trident. Their reentry body will fly on a Minuteman or a GBSD and then, that are unique that based on the two missiles.

In doing so, we are able to, I would say, assist the Air Force in cost avoiding a significant amount of money. And what it did is it allowed both services as well as Sandia to optimize the talent pools and grow those over time. So, I applaud and I'm 100 percent on board. That program is on schedule for December 19 IFI in the United States Navy and all the work has been transferred to the Air Force in support of their fuse program, sir.

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

BENEDICT: Yes, sir. I believe that within the Navy and the Air Force, there are four unique specific technologies that if the United States Navy or the United States Air Force is not in design, development or production, an industry in and of themselves will be incapable or have no economic incentive to sustain, one of them being solid rocket motors at the strategic grade at both the Navy and the Air Force. The other one is radiation-hardened electronics to the levels that we need which are far above sun radiation.

The other one is reentry body materials and the specific unique aspects of those. And then, the fourth one is our guidance requirements for both ICBMs and SLBMs. So, I can remember back to the day when there were congressionally mandated technology application programs which ran at a certain level and they were generated, directed by Congress so that the Navy and the Air Force could sustain those capabilities as well as grow the personnel talent in order to implement in the future.

Over time, those have basically waned to zero. So, I think those are absolutely necessary attributes. Today, what we're doing is working collaboratively, Navy and the Air Force, to try and through commonality share some of those requirements, but they are on the edge of extinction if we find ourselves in a period as we do now. The Navy coming out of D5LE, a period of time before GBSD ramps up, the nation, not the Navy or the Air Force, but the nation I believe is at risk.

RAND: I don't have anything to add. I agree with Admiral Benedict completely on that.

HEINRICH: It sounds like we need a MESA 2.0. But moving to another related issue, General Rand, I wanted to ask you. It's my understanding that last year Kirtland Air Force Base actually became a global strike command base. How is that transition going? What are you doing to integrate the base into your command?

RAND: Yes, sir. Thank you. I'm really, really proud to have Kirtland in the command. It made all the sense in the world and I would tell you the transition's over, it was very seamless.

HEINRICH: Right.

RAND: And it was a snap a chalk line and we did it. Eric Froelich and his wife just got the O'Malley Award for the best wing commander...

HEINRICH: Yes.

RAND: ...and spouse in the Air Force. Great leadership matters. But it made sense if I may because because if Air Force Global Strike is designated the lead command for all nuclear in the United States Air Force there's so much at Kirtland it made all the sense in the world to include the underground munitions maintenance storage complex, Sandia labs, the nuclear weapons center, the safety center, all the things that we do.

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

HEINRICH: Great. I'm glad to hear that.

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

RAND: If I may first, sir, and then I will defer to Doctor Soofer to give the policy part. For me it was the compliance piece. And as I am happy to report that we are in compliance with what we were required to do with our bombers and our ICBMs.

As of two June we are three months ahead of STRATCOM's requested date and it was February of 18. And I think that we had to meet the New START and we're complete. So from compliance the United States Air Force is in full compliance with New START.

And I will defer to you.

BENEDICT: Yes, sir, if I may, we have completed our conversion on New START treaties, on 13 of the 14 boats. The remaining vote will be done next month. It has departed the shipyard, and so, it's just been one of access, and so, we will complete next month well in advance of General Rand's acknowledgement of the February 18 requirement.

HEINRICH: Great.

Dr. Soofer?

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

But in terms of how we assess the New START Treaty or this the way I look at it, it's not so much what's in the treaty, but what's not in the treaty that may present the problem, that we're going to look at in the Nuclear Posture Review. So the New START Treaty did not address the whole host of non-strategic nuclear weapons. And it's those categories of weapons that are on the rise. So we have to understand what the implications are of that for nuclear posture.

So I just say that there's a broader issue than just whether or not to stay within the INF Treaty, I'm sorry, the New START Treaty. Even if you stay in the New START Treaty there may be strategic implications.

FISCHER: Thank you, Senator.

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

General Rand, in your prepared testimony you state that lessons learned from the difficulties sustaining and modernizing the B2 small fleet should be considered when determining the purchase size of future acquisitions such as the B21. Could you elaborate on that, please?

RAND: Yes, ma'am.

I mean obviously the first thing is to meet combatant commander requirements. And so, the reason that I have established what I consider to be a minimum of 100 B-21s has everything to do with being able to meet the requirements that the combatant commanders have established for us. But we have to learn from the painful experience of the B2. That program was going to be well over 100, it got slimmed down and eventually ended up at 21. It became very expensive, and now as we find very difficult to maintain a small fleet as it's now 25 years old. There's such a few of them. We're having trouble with sub-contractors, parts, the supply chain.

These are just things that you don't have to deal with when you have a larger fleet. But again, the size of the fleet isn't going to be based just on that, it's really to meet requirements.

FISCHER: And it is a good lesson for the future?

RAND: It's a very good lesson. And so, two things would happen, Ma'am, if we didn't get the minimum of 100. I would not be meeting critical combatant commander requirements and it would be another nightmare to maintain. And we'd have to keep other bomber fleets that I think have lost their utility longer than what they are intended for.

FISCHER: Thank you, sir.

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

BENEDICT: Yes, Ma'am. You're referring to our, Lockheed's decision and our support of that decision to move the fleet ballistic missile program out of Sunnyvale, California and relocate approximately 650 individuals to their Lockheed facility in Denver, Colorado. And down to the Space Coast of Florida.

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

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

If you go to Sunnyvale, California where Lockheed is, at one time it was a sprawling campus. It is now literally a much smaller campus surrounded by Google, Facebook, Yahoo, Juniper, you can go on and on, and on. And the ability to attract talent at a rate that I can afford, both I and Lockheed recognized it was not a sustainable program until 2084. So I applaud completely the decision by Lockheed to take this time and invest the amount of analysis that they have done in order to make the move at this point in the program before we start back up with a potential follow-on missile to the Trident II D5.

So we are fully on board, Ma'am.

FISCHER: OK. Thank you. You and I have had discussions about the Columbia Class submarine and the production schedule that we're looking at there and that there really is no margin for delays in that schedule if we're going to have them on watch in 2031. That's only 14 years from now and this is DOD's second largest acquisition program. So I certainly hope nothing goes wrong as we are moving forward.

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

BENEDICT: Yes, Ma'am, we have spent an appropriate amount of time under close scrutiny of Mr. Stackely when he was the Assistant Secretary of the Navy and he remains personally and professionally invested in this program as the Acting Secretary.

Throughout the development of the program, we took steps to mitigate risk and I will give you a couple, at least on my side, the Strategic Weapons System. We authorized the development and the formulation of what we call the Strategic Weapons System Ashore facility down in Space Coast, Florida, at the naval ordnance test unit. That facility is up and half of this facility is certified, the other half is on track to be certified.

What that would allow us to do is proof all the shipyard integrated test programs which will expedite the acceptance of the platforms as they move through not only Electric Boat but also the U.K. shipyard over in Barrow-in-Furness in the United Kingdom. So that is a major risk reduction.

The other major risk reduction is the facility that we built at China Lake, California at the Naval Air Warfare Center. And that is where we will certify the ability to get back into production of our launch tubes. We have been out of production of launch tubes for about 25 years, many, many of the materials have changed, our glues, our adhesives, the materials that are absolutely paramount to a successful launch under water which you had the opportunity to witness, of a missile the size of a Trident.

So we will use that facility to certify the design, and then we will go into production there.

On the ship-board side Naval Reactors has their own program that they are operating out of Philadelphia, Pennsylvania to ensure that their components are tested well in advance and certified to move towards the platform itself. And then with Electric Boat in concert with the United Kingdom we have a First Article Test Program where we will build early and jointly to ensure that the design is valid, and that the design can be produced not only on schedule but most importantly on cost as we move forward.

So all these things are moving in parallel, and then they all converge starting in essentially '21, so that we can put the boat in the water in '28 and be on patrol in '31.

Yes, Ma'am.

FISCHER: Thank you, sir.

Senator Donnelly?

DONNELLY: Thank you, Madam Chair.

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

SOOFER: Thank you, Senator.

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

And if you look at the box in the lower right hand corner this is the cost, these are all the new stuff that we need to buy, right, that the Triad, the nuclear command and control. And if you look at the peak there it's about 6.5 percent of the defense budget.

If we did not do the recapitalization we'd still be spending about three percent, so today we spend about three percent of the defense budget on all of our nuclear enterprise. That is to operate there, to sustain it and maintain it. The additional increment for the modernization and recapitalization would be probably another 3 to 3.5 percent.

DONNELLY: OK. Another question I wanted to ask you about, obviously this situation with North Korea is difficult, it's tense.

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

SOOFER: Thank you, Senator. It's a multi-faceted approach. So there is the Secretary of Defense visiting South Korea is one way of assuring that. We have bombers that over-fly South Korea, that send the message. We take their senior military officials to visit certain U.S. nuclear capabilities. We hold dialogues with their military and with their Ministry of Foreign Affairs twice a year, once in their country and once in the United States to talk about the U.S. nuclear strategy, to try to explain to them some of our capabilities.

And so, it's a combination of the messaging, and the actual capabilities that we show them that hopefully reassures them.

DONNELLY: And my last question is, Admiral Benedict, I was wondering what are the main risks that you are concerned about with the construction of the launch tubes for the Columbia-Class? I know you've talked a little bit about changing materials from before and all of this kind of things. What are the things that keep you concerned?

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

Obviously, a lot has changed in those 25 years, specifically the environmental aspect that we are now required within the United States, and specifically in the state of California, we produce our launch tubes in Sunnyvale, California, at Northrop Grumman. So as we do that the original design called for some very unique adhesives, glues, materials which if we could find them, which we can't, we'd probably have a hard time incorporating them into the current design.

So we've had to replicate or in many cases supplement different materials. Again, as you had the opportunity to ride the boat and watch the launch of a Trident, that is a -- it's a very simplistic looking launch tube but it's a very complicated design to keep that pressure underneath that missile as we eject it

in a steam bubble. And that whole launch tube has to sustain that shock and that impulse while the missile travels through it. So that's what keeps me up.

And then of course the other thing is the workforce, there is no workforce the built the last launch tube, we have to create a workforce.

DONNELLY: Let me ask you one more.

BENEDICT: Yes, sir.

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

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

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

DONNELLY: Yes, and this is for Lockheed Martin too?

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

DONNELLY: And has Lockheed looked at other options than the Space Coast in Colorado?

BENEDICT: Well, Lockheed looked at those and made that decision. So Lockheed FBM (ph) is out of Sunnyvale.

Now there remains THAAD and other programs, satellite programs will remain in Sunnyvale. The only program moving completely out of Sunnyvale, California for Lockheed Martin is the Fleet Ballistic Missile Program. Northrop also produces a significant amount of material for PEO Submarines and naval reactors. So turbines and gears, all that material is produced in the same factory that I produce the launch tubes.

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

DONNELLY: Thank you, Madam Chair.

FISCHER: Thank you, Senator Donnelly.

I'm going to ask another question, if you want to follow up again too then -- we're having a lot of fun here today. So thank you.

General Rand, I just wanted to point out something in your written testimony that you said, "I cannot overemphasize this point, B-21 and B-52, without the LRSO greatly reduces our ability to hold

adversaries at risk, increases risk to our aircraft and air crew, and negatively impacts our ability to execute the mission."

Would you like to comment on that?

RAND: Ma'am, I don't know how I can make it any clearer. I stand by those words.

FISCHER: And you would -- you would be supportive of us moving forward on that, correct?

RAND: Absolutely.

FISCHER: OK. Thank you, sir.

RAND: Again, the only comment I -- to me it's just critical and fundamental that we have long-range standoff with or without a B-21. The current long-range standoff nuclear weapon we have, the Outcome air-launched Cruise Missile is 37 years old today. It will hit 40 by 2020, and by the time we replace it in 2030 it will be a 50-year-old weapon system.

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

FISCHER: OK, thank you, sir.

Senator Donnelly, do you have anything to add?

DONNELLY: I just want to thank the witnesses for being here.

FISCHER: OK.

I would thank you all for being here today. We always appreciate the information that you provide to us. If you do receive written questions from any members I would ask that you'd answer those and return them promptly.

Thank you again for your attendance. We are adjourned.