

Stenographic Transcript
Before the

Subcommittee on Strategic Forces

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

HEARING TO RECEIVE TESTIMONY ON THE DEPARTMENT OF
ENERGY'S ATOMIC ENERGY DEFENSE ACTIVITIES AND
DEPARTMENT OF DEFENSE NUCLEAR WEAPONS PROGRAMS
IN REVIEW OF DEFENSE AUTHORIZATION REQUEST FOR
FISCAL YEAR 2023 AND THE FUTURE YEARS DEFENSE
PROGRAM

Wednesday, April 27, 2022

Washington, D.C.

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8
9 U.S. Senate

10 Subcommittee on Strategic

11 Forces

12 Committee on Armed Services

13 Washington, D.C.
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15 The committee met, pursuant to notice, at 4:30 p.m. in
16 Room SD-G50, Dirksen Senate Office Building, Hon. Angus
17 King, chairman of the subcommittee, presiding.

18 Committee Members Present: King, Warren, Rosen, Kelly,
19 Fischer, and Tuberville.
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1 OPENING STATEMENT OF HON. ANGUS KING, U.S. SENATOR
2 FROM MAINE

3 Senator King: This is a hearing on the Department of
4 Energy's atomic energy defense activity and Department of
5 Defense nuclear weapons programs in review of the Defense
6 Authorization Request for fiscal year 2023. This is a
7 meeting of the Strategic Forces Subcommittee of the
8 Committee on Armed Services of the United States Senate.

9 Senator Fischer is on her way over from the floor and
10 will be here shortly, but I am going to begin the hearing
11 and we will have a brief statement from her when she
12 arrives.

13 First I want to thank all the witnesses for joining us
14 today. The purpose of our hearing is to examine the fiscal
15 year 2023 budget request for the defense portion of the
16 Department of Energy's budget. This portion of DOE's budget
17 involves primarily the National Nuclear Security
18 Administration, or NNSA, and the environmental cleanup of
19 the DOE's former defense sites.

20 Our NNSA witnesses will be Administrator Jill Hruby;
21 the Deputy Administrator for Defense Programs, Dr. Marvin
22 Adams; and the Deputy Administrator for Office of Naval
23 Reactors, Admiral Frank Caldwell. For the DOE Office of
24 Environmental Management our witness will be Mr. Ike White,
25 the office's senior advisor.

1 The NNSA's fiscal year 2023 budget request is \$21.4
2 billion, a 3.7 percent, or \$754 million increase from the
3 fiscal year 2022's enacted level of \$20.6 billion. The DOE
4 Office of Environmental Management's fiscal year 2023
5 request of \$6.9 billion is up 3 percent, or about \$205
6 million from the fiscal year 2022 enacted level of \$6.7
7 billion.

8 This hearing will also examine the fiscal year 2023
9 budget request for the Air Force and Navy as it relates to
10 atomic defense activities. For the Air Force, our witness
11 is General Cotton, the Commander of the Air Force Global
12 Strike Command, and for the Navy is Vice Admiral Johnny
13 Wolfe, Director of the Strategic Systems Program Office.

14 In order to meet DoD requirements, the NNSA is the
15 busiest it has been since the 1980s -- congratulations, Ms.
16 Hruby -- with five major warhead programs and a number of
17 large construction projects. I am hopeful we can understand
18 the challenges that the NSA faces in dealing with DoD needs.
19 Likewise, I am hopeful we can understand from our DoD
20 witnesses what they see as the key hurdles facing NNSA as
21 well as unique DoD requirements as they relate to the NNSA's
22 modernization programs.

23 Today's hearing will involve two panels. The first
24 will have Administrator Hruby, Admiral Caldwell, and Senior
25 Advisor White. The second panel will have Deputy

1 Administrator Adams, General Cotton, and Vice Admiral Wolfe.
2 After short opening statements we will proceed with
3 questions from each member at 5 minutes each. And as I say,
4 when Senator Fischer arrives we will give her a moment to
5 make a brief opening statement.

6 But in the meantime, Administrator Hruby, why don't you
7 begin. And I apologize for this awkward arrangement, but
8 everybody is having meetings this afternoon, and this is
9 room we drew, and this is the setup, understanding the
10 circumstances.

11 Administrator, please proceed.

12 Ms. Hruby: Okay. I am waiting for a light. Yeah, it
13 is on. All right.

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1 STATEMENT OF THE HONORABLE JILL M. HRUBY,
2 ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

3 Ms. Hruby: Chairman King and Ranking Member Fischer to
4 be, and members of the subcommittee, I am honored to present
5 the President's fiscal year 2023 budget request for the
6 National Nuclear Security Administration. Thank you for
7 your enduring bipartisan support.

8 Chairman King, I have provided a written statement and
9 respectfully request that it be submitted for the record.

10 Senator King: Without objection.

11 Ms. Hruby: The President's fiscal year 2023 budget
12 request for NNSA is \$21.4 billion. Informed by the 2022
13 Nuclear Posture Review, this request underscores both our
14 expanded mission and the increasing pace required to meet
15 program needs.

16 The weapons activity request is \$16.5 billion, and
17 includes nearly equal funding for stockpile management,
18 about \$4.9 billion, and production modernization, about \$4.6
19 billion. This is an indication of NNSA's biggest challenge,
20 to succeed in parallel weapons modernization and
21 infrastructure revitalization.

22 This approach carries risk. However, it is our only
23 feasible path to meet requirements, and we are making steady
24 progress. The W88 Alt 370 for the sea leg of the triad and
25 the B61-12 for the air leg have achieved first production

1 and are on track to meet DoD schedules. The W80-4 for the
2 long-range standoff missile, the W87-1 for the Sentinel
3 intercontinental ballistic missile, and the W93 for the sea-
4 launched ballistic missile are in various phases of design.

5 On the infrastructure side, the uranium processing
6 facility is enclosed and projected to be complete in 2026,
7 and the 90 percent designs are underway for our two pit
8 production facilities.

9 We continue stockpile sustainment, other production
10 projects, and science, including establishing a program to
11 strengthen stockpile digital resilience. Together these
12 programs will fulfill the Administration's commitment to a
13 safe, secure, reliable, and effective nuclear deterrent into
14 the future.

15 The Defense Nuclear Nonproliferation budget request is
16 \$2.3 billion, and it aims to reduce global nuclear threats,
17 and is essential in today's geopolitical landscape.
18 Lowering nuclear risk with robust safeguards and stepping up
19 cooperation with governments, international organizations,
20 and the private sector help support the global expansion of
21 peaceful nuclear use while managing proliferation. We
22 continue to strengthen our ability to respond to nuclear and
23 radiological incidents, and these capabilities have proved
24 pivotal to inform the ground truths about nuclear threats in
25 Ukraine. Admiral Caldwell is here to provide detail on the

1 naval nuclear reactor budget request.

2 The key to success is a high-quality workforce, and we
3 are placing a high priority on attraction and retention
4 throughout the enterprise.

5 In summary, NNSA faces difficult mission requirements
6 in a difficult world. This budget request strikes the
7 balance for NNSA to be responsive and responsible.

8 Thank you. I look forward to your questions.

9 [The joint prepared statement of Ms. Hruby and Mr.
10 Adams follows:]

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1 Senator King: Senator Fischer, I reserved time for you
2 to make a brief opening statement if you would like.

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

3 Senator Fischer: Thank you very much, Mr. Chairman,
4 and my apologies for being a few minutes late.

5 Overall I was very pleased to see that the budgets
6 strongly support nuclear modernization that has been
7 presented and embraced the renewal of our nuclear triad and
8 nuclear infrastructure conceived during President Obama's
9 tenure over a decade ago. However, I still have a number of
10 concerns about the Administration's budget request.

11 In particular, I am concerned about the shortfall in
12 funding for NNSA's budget and the impact this could have on
13 plutonium pit production. While additional resources alone
14 will not be sufficient to ensure pit production requirements
15 are met, I believe we must do all we can to minimize the
16 delay in delivering this critical capability.

17 Additionally, the Air Force's unfunded priorities list
18 included several items related to our nuclear forces and
19 nuclear command, control, and communications architecture,
20 including \$63 million in unfunded requirements for the
21 Minuteman-III sustainment.

22 While we often focus heavily on modernization programs,
23 we cannot forget that our current nuclear forces must be
24 sustained and remain effective over the next decade until
25 the replacements are fully operational.

1 I look forward to hearing more from our witnesses. I
2 thank you all for being here. I thank you for the work that
3 you do, and thank you, Mr. Chairman, for the hearing.

4 Senator King: Admiral Caldwell, please.

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1 STATEMENT OF ADMIRAL JAMES F. CALDWELL, JR., USN,
2 DEPUTY ADMINISTRATOR FOR NAVAL REACTORS, NATIONAL NUCLEAR
3 SECURITY ADMINISTRATION

4 Admiral Caldwell: Chairman King, Ranking Member
5 Fischer, distinguished members of the subcommittee, thank
6 you for the opportunity to testify here today.

7 Your consistent support for naval reactors allows my
8 team to provide the Navy with the unmatched power and
9 capability of nuclear propulsion. This gives our Navy the
10 reliability, agility, and firepower to carry our national
11 security missions around the world. Our investments in
12 research and development over many decades have enabled the
13 advanced technology in today's fleet. These investments
14 have given the nation a competitive edge in the maritime
15 environment.

16 Today we cannot do more of the same and expect that
17 same advantage in the future. Our adversaries are pursuing
18 military modernization programs across the spectrums of
19 warfare aimed at eroding our maritime preeminence. Focusing
20 on the future is a necessity, but that future needs to be
21 built on the foundation of our people, our technology, and
22 our facilities.

23 My budget request for fiscal year 2023 is for \$2.08
24 billion and invests in three key areas of that foundation
25 and three priority projects.

1 First, the budget request supports our most important
2 resource, our people. The talented and dedicated people at
3 our D.C. headquarters and our field offices around the
4 country are absolutely essential to our strong, centralized
5 management and oversight of the important work we perform
6 for the nation.

7 Second, the budget request reflects the continuation of
8 increased investment in research and development.
9 Technology investment must be reinvigorated today to be
10 ready for future shifts with the goals of lowering costs,
11 reducing construction timelines, and adding capability to
12 our fleet.

13 My request also focuses on investments to modernize our
14 critical laboratory infrastructure and reduce our legacy
15 environmental liabilities. Without this we will be unable
16 to support fleet operations and vital research and
17 development.

18 This year's request also supports the continued
19 execution of three national priority projects. The first is
20 the development of the reactor plant for the Columbia-class
21 ballistic missile submarine, directly supporting the Navy's
22 number one acquisition priority. Manufacturing the lead,
23 life-of-ship reactor core is well underway. This year's
24 request will allow my team to continue the work required for
25 reactor plant testing and reactor plant delivery.

1 The second project is the refueling overhaul of our
2 land-based prototype reactor in New York. Once complete,
3 this reactor will provide 20 more years of student training
4 and vital research and development.

5 The third project is the continued construction of the
6 Naval Spent Fuel Handling Facility in Idaho, which will
7 enable long-term, reliable processing and packaging of spent
8 fuel from the Navy's nuclear fleet.

9 In closing, your strong support enables me to carry out
10 Naval Reactors' mission. I respectfully urge your
11 endorsement of our fiscal year 2023 budget request. Thank
12 you very much.

13 [The prepared statement of Admiral Caldwell follows:]

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1 Senator King: Thank you, Admiral. Mr. White, please.

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1 STATEMENT OF WILLIAM WHITE, ACTING ASSISTANT SECRETARY
2 OF ENERGY FOR ENVIRONMENTAL MANAGEMENT

3 Mr. White: Chairman King, Ranking Member Fischer, and
4 members of the subcommittee, it is an honor to appear before
5 you today to represent the Department of Energy's Office of
6 Environmental Management.

7 EM is focused on its commitment to clean up the
8 environmental legacy of the national defense programs that
9 helped end World War II and the Cold War. This work helps
10 address the government's responsibility to the communities
11 that played such an important role in U.S. history, and more
12 importantly helps position them to continue to grow and
13 thrive in the future.

14 Today EM has completed cleanup activities at 92 of 107
15 sites, most recently completing legacy work at the Brookhaven
16 National Laboratory in New York.

17 Even as EM has grappled with a global pandemic over the
18 past 2 years, we have achieved a set of impactful
19 accomplishments in the cleanup program. At Y-12 in Oak
20 Ridge, EM demolished the biology complex so that this area
21 can be used by NNSA for their modernization program.

22 Senator King: Could you get a little closer to the
23 mic, please?

24 Mr. White: Of course, sir. At Y-12 in Oakridge, EM
25 demolished the biology complex so that this area can be used

1 by the NNSA. More than 200 transuranic waste shipments were
2 received last year at the Waste Isolation Pilot Plan,
3 bringing the total to more than 13,000 shipments safely
4 transported. That includes shipments from Los Alamos, where
5 the team certified and completed 30 shipments to WIPP last
6 year.

7 At the Hanford Site in Washington State, EM has begun
8 large-scale treatment of radioactive tank waste in the Tank
9 Side Cesium Removal system, another project completed ahead
10 of schedule and under budget. We have treated around
11 200,000 gallons of waste since the system came online just a
12 few months ago.

13 At Savannah River in South Carolina, EM is processing
14 record amounts of tank waste, helping to address one of the
15 largest environmental and financial liabilities there.

16 The EM team in Idaho recently completed its buried
17 waste remediation project 18 months ahead of schedule. This
18 high-priority cleanup project helps protect the Snake River
19 Plain Aquifer and meets the commitment we made to the State
20 of Idaho.

21 The fiscal year 2023 budget request will enable EM to
22 further advance its mission, maintain national security
23 priorities, and support those most impacted by the
24 environmental legacy of the past. We will treat 1 million
25 gallons of radioactive tank waste at the Hanford site and

1 advance work to begin vitrifying this tank waste by the end
2 of 2023. After decades of support from Congress, this
3 transformational accomplishment is well within sight.

4 As EM prepares to operate these facilities, it is also
5 ramping up work on Hanford's high-level waste facility so
6 that we are ultimately able to treat that portion of the
7 tank waste too.

8 In South Carolina, EM will accelerate waste processing
9 and tank closure activities, and at the Idaho National
10 Laboratory we are advancing towards liquid waste treatment
11 with the Integrated Waste Treatment Unit. The request will
12 also allow us to address high-risk excess contaminated
13 facilities and contaminated groundwater across the complex.

14 In addition to reducing environmental risks, the budget
15 request supports broader national security and scientific
16 research missions. The Waste Isolation Pilot Plant will be
17 modernized and ensure that the facility is equipped to meet
18 the needs of legacy cleanup activities and ongoing national
19 security programs. And as the mission is carried out, we
20 are committed to continuous improvement. GAO's latest high-
21 risk report acknowledged the steps EM has taken to
22 demonstrate this commitment, and we aim to go even further
23 as we plan for the future.

24 The cleanup program depends on the talented men and
25 women on the ground at our sites. That is why I am pleased

1 the budget request boosts support for workforce development
2 and for building a pipeline of talent that promotes
3 diversity, equity, and inclusion.

4 As EM makes steady cleanup progress and prepares for
5 future mission needs, we remain committed to those most
6 impacted by the environmental legacy of the past. Our sites
7 are fortunate to be surrounded by diverse communities and
8 tribal nations who are strong partners in advancing cleanup
9 and planning for the future.

10 I appreciate the subcommittee's support for the EM
11 mission. I thank you for your time, and I look forward to
12 your questions.

13 [The prepared statement of Mr. White follows:]

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1 Senator King: Thank you. We will have 5-minute
2 rounds, and we will ask a few questions. We will probably
3 have more than one round. We have a second panel.

4 Ms. Hruby, the budget request is about a 3 percent
5 increase, but as I mentioned in my opening statement you are
6 as busy as the agency has been in 40 years. Is 3 percent
7 enough to meet the demands of the recapitalization, the
8 Savannah River cleanup? I mean, we have got a whole host of
9 problems. Is this amount sufficient?

10 Ms. Hruby: Yes, Senator King, thanks for that
11 question. We think this is a budget that we can execute and
12 that will keep us on track for requirements, on our
13 requirements. It is true that it would be nice to complete
14 our construction projects and have them ready to go for the
15 rest of our modernization programs, but we simply cannot go
16 any faster than we are currently going on those construction
17 projects and have acceptable risk and get the products that
18 we want.

19 So we think this is the right budget. It was fully
20 informed by the Nuclear Posture Review, and it does, in
21 fact, underscore the expanded mission and the accelerated
22 pace. It comes on top of budget increases over the last
23 several years that have been significant.

24 However, as I said in my opening statement, the
25 parallel approach we are taking for modernization and

1 infrastructure revitalization carries persistent risks and
2 includes things like single points of failure in our
3 production complex, supply chain issues in construction
4 projects, and workforce recruitment and retention across the
5 complex. So we feel like this is a practical, accelerated
6 budget, but it will carry risk because we are moving as fast
7 as we can.

8 Senator King: Let me change the subject a minute to
9 nonproliferation. One of the things that is not discussed
10 much with regard to the Ukraine war is that Ukraine gave up
11 its nuclear weapons in exchange for a guarantee of
12 territorial integrity, which was signed by Russia. What has
13 what has happened in Ukraine done to the whole theory and
14 practice of nonproliferation? If you were Kim in North
15 Korea, would you give up your nuclear weapons, having seen
16 what has happened in Ukraine?

17 Ms. Hruby: Senator King, this is an important
18 question. The Ukraine guarantees, you know, people will
19 look at around the world. I am confident of that. At the
20 same time, we will do everything we can in NNSA to uphold
21 the nonproliferation regime that we have today. We will
22 reach out, and we are reaching out to our allies and
23 partners as particularly the allies that we have a guarantee
24 with, to make sure they understand how strong our commitment
25 to that guarantee is. We will continue to support

1 activities in the nonproliferation area. But we must step
2 it up in our ability to convince people around the world
3 that nuclear weapons are not the best approach and hopefully
4 not take the wrong lessons from Ukraine.

5 Senator King: Well, I hope you are right, but I think
6 it is of significant concern.

7 Pit production. Are we facing a pit gap? In other
8 words, is it likely that we are going to be able to meet the
9 needs or are we going to be, in 5 years, talking about some
10 emergency program to fill in the gap to meet the needs for
11 the newly deployed weapons?

12 Ms. Hruby: We think -- look, we are not going to be
13 able to make 80 pits per year by 2030.

14 Senator King: Is 80 a magic number? Is 80 the number
15 that we project we will need?

16 Ms. Hruby: That is a good question. So we are working
17 really closely right now with the Department of Defense,
18 NNSA and the Department of Defense, to look at the outyear
19 requirements and to see how we can satisfy the program of
20 record in ways that we are all comfortable with, that mean a
21 safe, secure, reliable, and effective weapon program,
22 nuclear weapons in the United States. And we believe there
23 will be a path through that, but we are still working
24 closely together to define the details of that.

25 Senator King: I would rather you say we know there is

1 a path, rather than say "we believe."

2 Ms. Hruby: I would rather say that as well, but, you
3 know, I am being honest with you, that we are still in the
4 process of sorting that all out in the Nuclear Weapons
5 Council.

6 Senator King: Well, to the extent you refine the
7 estimates and realize there is a problem, let us know sooner
8 rather than later so we can attend to this problem now
9 rather than 5 years from now.

10 Ms. Hruby: Let me just say another word about this.
11 We are establishing pit production as a hedge against
12 plutonium aging and pit aging. Our pits are not, today, at
13 any kind of an aging cliff. We can reuse pits. We just do
14 not like that plan because we may have to take them out
15 before the end of the life of the weapon system. But right
16 now we are not at the cliff of aging program. We just would
17 like to put new pits in because we want the weapons to stay
18 in the stockpile for 30 years, and we do not have the 30-
19 year confidence we would like to have.

20 Senator King: Thank you. That is helpful.

21 Senator Fischer: Thank you, Mr. Chairman.

22 Ms. Hruby, this year's budget talks about minimizing
23 the delay in pit production and repeatedly emphasizes
24 achieving the necessary rate of 80 pits per year, quote, "as
25 close to 2030 as possible." Yet your letter to this

1 committee on your unfunded priorities states that additional
2 resources would allow NNSA to begin additional activities at
3 the Savannah River plutonium processing facility. Would the
4 additional resources referred to in your letter help
5 minimize the delay in pit production?

6 Ms. Hruby: Senator Fischer, thank you for that
7 question. The answer is yes. We would like to bring money
8 forward from out years on the Savannah River pit production
9 facility to do some early buys -- glove boxes, nuclear-
10 quality piping, other shortages that we are seeing in the
11 supply chain. We would also like to build a training
12 facility at Savannah River to get the workers ready to get
13 to rate production once construction is complete. So we
14 would like to try to accelerate how fast we can go with
15 construction, once our design is complete, and how fast we
16 can get to rate production after the construction is
17 complete. And that is what the unfunded request letter is
18 about, is the money that we would like to pull forward into
19 the 2023 budget request from our future years request.

20 Senator Fischer: In our discussion this morning you
21 said we are looking at a 2032 to 2035 time frame for
22 achieving the 80 pits per year rate that I believe we need
23 to have, and it also will likely be another 2 years before
24 we have a good idea of how to get there. I think I need to
25 be clear. The additional resources you are referring to

1 make achieving full production by 2032 more likely. Is that
2 correct?

3 Ms. Hruby: Yes.

4 Senator Fischer: So are in a position now, would you
5 say, to be able to shape events so that we can reach that
6 desired outcome of 2032, if we take the correct steps now?

7 Ms. Hruby: That is what we think. I just want to
8 foot-stomp that we did get the money that we need to
9 complete the 90 percent design, so a significant amount of
10 money, \$700 million. This additional request would allow us
11 to position ourselves to make sure once we are done with the
12 design we can go as fast as possible.

13 Senator Fischer: Okay. Earlier today we also
14 discussed the goal of having nuclear infrastructure that is
15 truly responsive to the changing security landscape that we
16 are facing. When we talk about a responsive nuclear
17 enterprise we usually think of facilities and production
18 capabilities. But do you think that our processes are set
19 up to allow us to move quickly? Do we need to take a fresh
20 look at things, like the Phase X process, to see if we can
21 go faster, where we can go faster?

22 Ms. Hruby: Yeah, thank you, Senator Fischer, for that
23 question. Our processes are set up to ensure we get to the
24 end state we want, and that is important. They are not set
25 up to go fast. And I do think we have to begin to look at

1 how we can move faster without undermining the intent of
2 staying, you know, on schedule and on budget and get what we
3 want and how we can manage the risk with changing those
4 processes and moving faster.

5 Senator Fischer: One thing we have seen on this
6 committee, when it comes to the Department of Defense, is
7 that over the last several decades they have structured
8 their processes I think to minimize risk. And now as we see
9 our security environment changing, I believe we need to
10 prioritize speed and also innovation, but that sometimes
11 means that we develop new approaches instead of relying on
12 legacy development processes that are already in place.

13 Do you think that the NNSA faces a similar challenge?

14 Ms. Hruby: Absolutely, and for probably largely the
15 same reasons. So we will look for ways to learn from what
16 the DoD is finding. We will look for ways to make our
17 processes more streamlined. We have had some success on
18 smaller construction projects where we cut out pieces of the
19 processes. We saved a lot of money. We have gone faster.
20 So we are doing some experiments on lower-risk systems, but
21 we have to carry that forward. I appreciate the question.

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

23 Senator King: Senator Rosen.

24 Senator Rosen: Well, thank you, Chairman King, Ranking
25 Member Fischer, for holding this hearing. It is very

1 important. I would like to thank each of the witnesses for
2 testifying today. Thank you for the service to our country.

3 I want to talk a little bit about the long-term funding
4 strategy for the Nevada National Security Site, because
5 since its inception, NNSS -- I do not know which one is
6 easier to say, Nevada National Security Site or NNSS. It is
7 a tongue-twister. But it has relied on its large and remote
8 area to conduct missions for the nation's nuclear weapons
9 and nonproliferation programs as well as other elements of
10 our national security community.

11 It is larger than all other NNSA sites combined, and it
12 is an equivalent size to the state of Rhode Island. NNSS
13 has a vast amount of infrastructure, a vast amount of
14 infrastructure to maintain, and I am delighted that you and
15 Secretary Granholm each visited the site recently. We
16 welcome the excitement and the attention that your visits
17 have brought to the important and really unique work that we
18 are doing there.

19 However, over the past few decades NNSS has faced
20 unstable and unpredictable program funding. It is leaving
21 the site with degraded infrastructure, despite being a
22 facility of national importance responsible for the
23 certification of our nuclear stockpile.

24 So I am pleased to hear the programmatic situation is
25 now changing in a positive direction, but I remain concerned

1 that we address this infrastructure funding issue so that
2 NNSS can continue to be a center of excellence for the
3 enterprise.

4 Administrator Hruby, are you considering innovative
5 approaches to assure that NNSS infrastructure is supported,
6 recapitalized, including base funding to guide future
7 investment planning?

8 Ms. Hruby: Yeah, Senator Rosen, it is nice to see you
9 and thanks for your continued interest and support of the
10 Nevada National Security Site. I will say that the
11 Secretary's visit and my visit were actually separate visits
12 but a week apart. I think I influenced her by calling in
13 every day saying, "Oh, it was a great visit to Nevada."

14 Senator Rosen: It is a great site, is it not?

15 Ms. Hruby: It is a great site, and I have been there
16 many, many times, but I have not been there for a few years.
17 And I will tell you I was very impressed by the progress
18 that has been made in Nevada, in the infrastructure and in
19 the collaboration with the laboratories to do experiments
20 there underground.

21 So to answer your question, I think we have a really
22 great plan for the Nevada National Security Site, and the
23 plan, from my perspective, looks like get our infrastructure
24 to a state that is really bringing important contributions
25 and is a good place for people to work, and then fund those

1 new capabilities to do important experiments for us going
2 forward. So we are spending a lot of time and money now on
3 construction. That will lead to a new demand in Nevada that
4 will bring that base funding that you are looking for.

5 Senator Rosen: Well, thank you. I want to build on
6 that because the Nevada National Security Site oversees our
7 Stockpile Stewardship Program, principally at the Ula
8 facility, the underground lab where the science is
9 conducting subcritical experiments to verify the reliability
10 and effectiveness of our nuclear stockpile. As you were
11 just there, Ula is undergoing major construction.

12 So could you provide us -- I know we are not in a
13 classified setting, but as much as you can -- provide us an
14 update on the upgrades and how these advancements really are
15 going to make a difference for those subcritical experiments
16 that are really going to improve our stewardship program?

17 Ms. Hruby: Sure. I would be happy to. There is this
18 program, another acronym mouthful, called Enhanced
19 Capability for Subcritical Experiments, ECSE, that includes
20 upgrades to the Ula tunnel complex, which is the tunnels
21 that we do science experiments in. It also includes new
22 tools, especially the sort of centerpieces, a radiography
23 tool that allows us to watch implosion, also critical, of
24 course.

25 And this this back to Senator King's question in an

1 interesting way. We need to understand how plutonium ages.
2 This facility, with the radiography, will allow us to watch
3 implosion in real materials, realistic geometries, which we
4 have not been able to do before.

5 If we believe that we can get a good, excellent
6 estimate of plutonium lifetime it allows us all kinds of --
7 actually pit lifetimes -- it allows us all kinds of options
8 going forward, and we do not have to use head strategy of
9 making sure we can make pits while we study aging.

10 Senator Rosen: Well, thank you. My time is up. I am
11 going to submit some questions for the record about the
12 Remote Sensing Lab that is also part of the Nevada National
13 Security Site and plays a critical role to our community as
14 well.

15 Thank you so much.

16 Senator King: Senator Tuberville.

17 Senator Tuberville: Thank you, Mr. Chairman. Thank
18 you, panel, for being here today and your time.

19 Mr. White, are you familiar with Uranium-233?

20 Mr. White: Yes, sir.

21 Senator Tuberville: Yeah, I figured you were. Your
22 office was tasked with downblending Uranium-233 in 2001. As
23 you may know, the U.S. pioneered thorium reactor technology
24 in the 1960s. These reactors cannot melt down and actually
25 consumes nuclear waste and do not rely on high-assay low-

1 enriched uranium, which all the Department of Energy's next-
2 generation reactors rely on.

3 Mr. White, what is the chief problem with the HALEU?
4 Do you know? It comes from Russia. Correct?

5 Mr. White: Yes, sir.

6 Senator Tuberville: Thank you very much.

7 Not only is 233 proven to create safe and clean power,
8 its grandchildren isotopes are also valuable to fighting
9 cancer. A May 2008 DOE report found that the destruction of
10 Uranium-233 threatened the supply of these lifesaving
11 treatments. The DOE's 2010 audit report said that
12 destroying Uranium-233 would blunt scientific research and
13 weaken National Security Administration's test readiness
14 program.

15 Mr. White, how many kilograms of this Uranium-233
16 remain to be blended? Do you know?

17 Mr. White: I do not know that exact number off the top
18 of my head, but I will be happy to take that for the record
19 and get it back to you.

20 Senator Tuberville: I will give it to you real quick
21 -- 450 that we have left, which is worth millions and
22 millions of dollars. Do you know how much it costs us to
23 downblend this U-233?

24 Mr. White: Our budget request for this year is for \$55
25 million.

1 Senator Tuberville: Fifty-five million. Correct.
2 Fifty-five million to destroy something that is worth
3 hundreds of millions of dollars, that we also can use for
4 other things.

5 Do you find it odd that your agency is tasked with
6 destroying something while, at the same time, the DOE gave
7 this technology to China? I mean, it is kind of odd. Does
8 it not seem odd to you?

9 Mr. White: The Environmental Management Program has a
10 number of conversations with other programs across the
11 Department as we look at whether facilities or material are
12 excess and ready for disposition. Those conversations are
13 often very difficult, and from an environmental management
14 perspective what we really look at is once other programs
15 have decided they no longer need the material, how we would
16 prioritize the disposition of the material or the facilities
17 within the scope of the larger cleanup program.

18 But the material that you are talking about at Oak
19 Ridge, this is a high priority from a disposition
20 perspective for the Environmental Management Program for a
21 number of different reasons. The material, as it is
22 currently stored at Oak Ridge National Laboratory, is one of
23 the more significant safety and security risks that we have
24 at Oak Ridge National Laboratory.

25 It is also material that is very expensive to safely

1 store and secure. The laboratory spends over \$50 million a
2 year to safely store and secure this material, and it is
3 being stored in some of the oldest operating facilities that
4 we have in the Department of Energy, so the cost of
5 continuing to store the material in these facilities is
6 going to go up over time.

7 At the moment we also have a very unique opportunity,
8 working with a public-private partnership, to make use of
9 some of the benefits that you just described. We have a
10 partnership that allows our contractor, Isotek, to extract
11 the thorium from the material. That is provided to another
12 company, TerraPower, which uses the thorium to extract
13 isotopes for lifesaving cancer research. And in the process
14 some of the cost of our disposition activity is covered by
15 that agreement between Isotek and TerraPower.

16 Senator Tuberville: Yeah. I would hope that we would
17 really look at this to make sure that while we are
18 destroying something that in the future we are not going to
19 have to turn around and try to either buy it from China, buy
20 it from Russia, or whatever, at the end of the day. I know
21 it is probably dangerous, and we do store it in Tennessee.
22 I am sure we could find a better place, that if they are not
23 wanting it there, heck, we will take it in Alabama and put
24 it in the Redstone Arsenal and protect it with our lives.

25 But I just hate that we are destroying something, that

1 we are paying to have destroyed, that we might use in the
2 future.

3 Mr. Chairman, I would like to submit these for the
4 record. I have got a 2008 Department of Energy Audit
5 Special Report, a 2010 Department of Energy Audit Report,
6 and a 2012 Summary Meeting Report between the Chinese
7 Academy of Sciences and the U.S. Department of Energy. I
8 would like to submit these for the record.

9 Senator King: Without objection.

10 [The information follows:]

11 [SUBCOMMITTEE INSERT]

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1 Senator Tuberville: Thank you very much.

2 Senator King: Senator Warren.

3 Senator Warren: Thank you, Mr. Chairman, and thank you
4 to our witnesses for appearing here today.

5 So we are modernizing our nuclear weapons program
6 including constructing new plutonium pits which produce the
7 radioactive raw material that we need for nuclear weapons.
8 Resuming pit production is a huge undertaking for NNSA, and
9 I have been a critic of some of NNSA's work because the
10 agency has a pretty lousy record of waste and mismanagement
11 that has cost taxpayers billions of dollars over the years.

12 Back in 2015, Congress set a requirement of producing
13 80 plutonium pits per year by 2030, and we are not off to a
14 great start on that. The estimated budget for this work, at
15 just one pit production site, doubled over the course of
16 just a couple of months.

17 So, Ms. Hruby, what is the best current estimate for
18 what 80 pits per year will cost?

19 Ms. Hruby: thank you, Senator Warren. I know this is
20 a topic that you care a lot about. We are, I think as
21 you know, in the process of completing the 90 percent design
22 of the Savannah River production facility and the Los Alamos
23 pit production project. Until those are done we will not
24 have a cost estimate that we can stand behind. It is true
25 there are always numbers floating around out there, but our

1 processes are such that we are really trying to get a firm
2 estimate and then come in on costs. So it would be
3 premature for me to give you a number for that.

4 Senator Warren: Premature? So NNSA budget estimates
5 put the figure at \$15 billion, I have seen press reports at
6 \$18 billion, and you cannot even tell me what neighborhood
7 this is in?

8 Ms. Hruby: I can tell you neighborhoods that it is in,
9 and it is going to be -- if I give a number then I am going
10 to be held to it, so with that caveat we do think it is
11 going to be more than \$10 billion.

12 Senator Warren: Well, I just got to say, that is a lot
13 of money.

14 Ms. Hruby: I understand. It is a lot of money.

15 Senator Warren: Whether it is \$10 billion or \$15
16 billion or \$18 billion. But even this astonishing number is
17 probably not enough to build these pits.

18 You know, when NNSA's Deputy Administrator was before
19 the committee a few weeks ago he said the 2030 goal is
20 likely unachievable, and I am going to read you what he
21 said. He said, "We can't get to 2030 by throwing more money
22 at it," unquote.

23 So let's talk about why things are going so poorly.
24 Last year the Department of Energy cost estimating shop
25 conducted an independent review of the Los Alamos facility's

1 pit production plant. They found, quote, "There are
2 significant risks in staffing, program management,
3 production activities, supporting infrastructure, waste
4 management, and other program requirements," unquote. You
5 know, the biggest problem is there was not a single
6 integrated plan in place to manage costs and schedule and
7 performance.

8 So, Ms. Hruby, is there now a single integrated program
9 management plan for pit production at Los Alamos?

10 Ms. Hruby: Yes.

11 Senator Warren: Yes. That is the good news, right?
12 Yes, there is, and I appreciate that. This was the answer I
13 wanted you to give. Yes, there is a plan in place. And I
14 appreciate that NNSA is trying to address the problems with
15 pit production. But there are no guarantees that this
16 program will ever be successful, no matter how much money we
17 spend. In fact, the pit production program has been drawing
18 comparisons to a previous program called the Mixed Oxides
19 Fuel Fabrication Facility, or MOX, which was designed to
20 dispose of surplus weapons-grade plutonium. MOX was always
21 technologically dubious and was finally cancelled after
22 wasting \$8 billion.

23 So here is my question, Ms. Hruby. Are you confident
24 that we are not going to end up sinking billions of dollars,
25 maybe tens of billions of dollars, into pit production

1 before finally pulling the plug, like we did with MOX?

2 Ms. Hruby: Yes, Senator, I am. Let me just say about
3 this. This is a very important programmatic objective. We
4 cannot fail.

5 Senator Warren: Well, I have to say I do not share
6 your confidence that this is going to work. As I told Dr.
7 Adams last month, I remain very concerned about this
8 program. I think we need to seriously assess whether our
9 goals whether the timeline we are all working on is
10 realistic. NNSA cannot keep wasting billions of dollars of
11 taxpayer money. This just has to stop. So thank you.

12 Ms. Hruby: Thank you.

13 Senator Warren: Thank you, Mr. Chairman.

14 Senator King: Thank you, Senator Warren.

15 Let's have our second panel join us please.

16 [Pause.]

17 Senator King: Welcome to our second panel. Dr. Adams,
18 will you begin?

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1 STATEMENT OF THE HONORABLE MARVIN L. ADAMS, DEPUTY
2 ADMINISTRATOR FOR DEFENSE PROGRAMS, NATIONAL NUCLEAR
3 SECURITY ADMINISTRATION

4 Mr. Adams: Yes. Thank you. Chairman King, Ranking
5 Member Fischer, and --

6 Senator King: Please get a little closer to the mic.

7 Mr. Adams: Will do. Chairman King, Ranking Member
8 Fischer, and distinguished members of the subcommittee,
9 thank you for the opportunity to discuss the President's
10 fiscal year 2023 budget for NNSA. I thank the committee and
11 the Senate for your support during my recent confirmation
12 process. I am honored to serve as Deputy Administrator for
13 Defense Programs, and I am committed to working closely with
14 you and others in Congress, along with our partners in DoD,
15 to advance the nuclear security mission.

16 The fiscal year 2023 budget request for weapons
17 activities is \$16.5 billion, which is about 3.6 percent more
18 than what was enacted in fiscal year 2022. This request,
19 informed by the 2022 Nuclear Posture Review, will enable
20 NNSA to keep our nuclear weapons stockpile safe, secure, and
21 effective.

22 NNSA is simultaneously executing five warhead
23 modernization programs. Two are in production and three are
24 following closely behind. Drivers for these programs
25 include technical issues with warheads, changes in DoD

1 delivery platforms, and emerging capability gaps.

2 Warhead modernization requires reinstatement or
3 replacement of lost manufacturing capabilities. With
4 support from current and past administrations and
5 Congresses, NNSA is modernizing and recapitalizing the
6 production complex while simultaneously using both old and new
7 infrastructure to manufacture modernized warheads.

8 Our highest infrastructure priority is reconstitution
9 plutonium pit production capabilities. We are executing a
10 two-site plan to produce plutonium pits at Los Alamos
11 National Laboratory and the Savannah River site. We assess
12 that this is the best way to reliably produce at least 80
13 war-reserved pits per year as soon as possible.

14 NNSA is also modernizing capabilities to process
15 uranium and lithium to produce tritium, to manufacture and
16 produce trusted rad-hard electronics, and to manufacture
17 non-nuclear components.

18 As we focus on the time-urgent delivery of modernized
19 warheads and an infrastructure that is modernized as well as
20 we must also develop and nurture capabilities to meet future
21 challenges. Continued investments maintain NNSA
22 experimental and computational capabilities that address
23 important stockpile questions, and importantly, that attract
24 outstanding scientists and engineers, and let them develop
25 into the experienced experts that the stockpile needs.

1 For example, ongoing investments support major
2 experimental facilities at all three NNSA laboratories, it
3 supports the enhanced capabilities for subcritical
4 experiments projects at the Nevada National Security Site,
5 supports exoscale computing that is coming, to be housed at
6 Lawrence Livermore National Lab, and much more.

7 I am confident that with support of Congress and in
8 partnership with DoD our dedicated workforce will meet these
9 unprecedented challenges that we face to maintain,
10 modernize, and sustain our nuclear deterrent into the
11 future.

12 Thank you for this opportunity to testify. I look
13 forward to your questions.

14 [The prepared statement of Mr. Adams follows:]

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1 Senator King: Thank you, Dr. Adams.

2 Admiral Wolfe, please.

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1 STATEMENT OF VICE ADMIRAL JOHNNY R. WOLFE, JR., USN,
2 DIRECTOR, NAVY STRATEGIC SYSTEMS PROGRAMS

3 Admiral Wolfe: Chairman King, Ranking Member Fischer,
4 distinguished members of the subcommittee, thank you for the
5 opportunity to testify on the Department of the Navy's
6 fiscal year 2023 budget priorities for nuclear forces. I
7 respectfully request that my written statement be accepted
8 for the record.

9 Senator King: Without objection.

10 Admiral Wolfe: For over six decades, the Navy has
11 provided unwavering support to the sea-based leg of the
12 nuclear triad. Since I briefed this committee last year, I
13 would like to share with you some of SSP's accomplishments
14 that build on this remarkable history.

15 In an effort to deliver a reliable and credible
16 strategic weapon system to the fleet we have successfully
17 completed a demonstration and shakedown operation onboard
18 the U.S.S. Wyoming, certifying this Ohio-class submarine to
19 return to alert patrol after a midlife refueling overhaul,
20 demonstrating to the world the continued performance and
21 reliability of this platform and the Trident II D5LE
22 strategic weapon system.

23 In coordination with our partners at NNSA, the W93/Mk7
24 program continues, and the W88/Mk5 ALT370 program has
25 achieved initial operating capability, further demonstrating

1 our commitment to responsible stewardship of our nuclear
2 stockpile. And although not nuclear but of particular
3 interest to this committee, I am incredibly proud of the
4 milestones our hypersonics team, responsible for the
5 Conventional Prompt Strike Program has achieved. These
6 milestones include successful experiments to demonstrate the
7 maturity of the common hypersonic glide-body technology;
8 three static fire tests of the Navy-developed 34 1/2-inch
9 missile booster; and a successful sounding rocket campaign,
10 demonstrating that our advanced communications capability is
11 sufficient mature to field our navy platforms.

12 The Navy continues to manage the Nuclear Strategic
13 Weapons System across three main mission priorities:
14 sustaining the current weapon system through Ohio end of
15 life, developing the strategic weapon systems of the future
16 for sea-based strategic deterrence on Columbia through 2084,
17 and safeguarding our special relationship with the United
18 Kingdom embodied in the Polaris Sales Agreement.

19 First and foremost, we must maintain the current D5LE
20 missile inventory and provide the necessary operational
21 support to sustain Ohio-class submarines and today's
22 strategic weapon system through its end of life in the early
23 2040s. This is being accomplished through an update to all
24 of our sub systems. All of our life extension efforts
25 remain on track, and our current program will support the

1 deployment of all existing warheads. We must recapitalize
2 all of our supporting Navy nuclear deterrence mission
3 infrastructure to support and sustain nuclear weapons and
4 SSBN operations.

5 Secondly, we must continue to ensure the transition
6 between Ohio-class and Columbia-class submarine stays on
7 schedule. For SSP, this requires a seamless transition of
8 the current D5LE weapon system and missile inventory onto
9 the new Columbia-class.

10 We have already started the work on the next variant of
11 Trident and its corresponding weapon system, D5LE2. D5LE2
12 will yield multiple benefits in missile performance while
13 providing flexibility in the system to meet future
14 warfighter requirements. To achieve these requirements, we
15 must design, develop, produce, and test this next-generation
16 Trident over the coming decade, with the first flight test
17 in 2033.

18 Finally, one of the greatest advantages the United
19 States has is its alliances and partnerships. As the U.S.
20 Project Officer for the Polaris Sales Agreement, we will
21 continue to support the UK's sovereign deterrent for today's
22 Vanguard-class submarines and their successor, the
23 Dreadnought-class. For decades U.S. policy has recognized
24 that the independent British nuclear deterrent adds to NATO,
25 and indeed global, stability.

1 Nuclear modernization will take time to complete, so
2 sustained resourcing and enterprise effort is absolutely
3 essential. It is only through your continued support that
4 the Department's top modernization program priorities can be
5 achieved and the Navy can deliver reliable sea-based
6 strategic deterrence to 2084.

7 As the 14th director, it is my highest honor to
8 represent the men and women of SSP. My number one priority
9 is to assure that these men and women are poised to execute
10 this mission with the same level of success, passion, and
11 rigor as they have since our program was founded.

12 Thank you for the opportunity to testify today on
13 behalf of the team that makes deterrence of major power
14 conflict their life's work, and I look forward to your
15 questions.

16 [The prepared statement of Admiral Wolfe follows:]

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19 Senator King: Thank you, Admiral. General Cotton?

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1 STATEMENT OF GENERAL ANTHONY J. COTTON, USAF,
2 COMMANDER, AIR FORCE GLOBAL STRIKE COMMAND

3 General Cotton: Good afternoon, Chairman King, Ranking
4 Member Fischer, and distinguished committee members. Thank
5 you for the opportunity to be here today and represent the
6 32,000 men and women of Air Force Global Strike Command.

7 I would like to express our gratitude for your
8 incredible support as we modernize the ICBM and bomber legs
9 of the nuclear triad and remain on pace and on time with all
10 of our efforts. As a force provider of strategic and long-
11 range strike, I am proud of the excellence and efforts of
12 our personnel as we deliver safe, secure, reliable nuclear
13 deterrence to this nation.

14 Today's global environment does not allow for a
15 diminished strategic deterrence. China has modernized at
16 breathtaking speeds, and we expect them to have over 1,000
17 nuclear warheads by 2030, nested within a modern triad. As
18 the Commander of STRATCOM has asserted, they have achieved
19 strategic breakout. Meanwhile, Russia has recapitalized
20 over 80 percent of their nuclear forces and are developing
21 new weapons capabilities as we speak.

22 While near-peer competitors garner significant
23 attention, we must not lose sight of the actions of other
24 potential adversaries. North Korea continues to conduct
25 missile tests, invest in hypersonic glide vehicle

1 technologies, manufacture physical materials, and operate a
2 sophisticated cyberattack capability as they maintain the
3 requisite infrastructure to conduct nuclear weapons testing.
4 Make no mistake: we are locked in an age of long-term
5 strategic competition, informed now by two nuclear-capable
6 peers and the advent of non-nuclear strategic weapon
7 systems.

8 Throughout all of this, our strategic deterrence
9 continues to hold, as the cornerstone of national security.
10 As the air and leg force provider to STRATCOM, I am
11 constantly balancing the sustainment of legacy equipment
12 with the acquisition of new weapon systems, ensuring
13 deterrence remains credible throughout modernization. To
14 maintain this balance as we build an enduring deterrent for
15 decades to come, we rely upon many partnerships inside and
16 outside the Department of Defense, including our partners in
17 the Department of Energy, the National Nuclear Security
18 Administration, and the Department of Navy.

19 I must always be ready to present credible and viable
20 forces, and for this reason we maintain constant readiness
21 24 hours a day. From our missile crews on alert and our
22 bomber crews accomplishing global bomber task force
23 missions, we remain ready to hold our nation's adversaries
24 at bay.

25 To guarantee continued deterrence into the future, it

1 is imperative that we remain on schedule as we bring new
2 weapon systems online within the triad. I am happy to share
3 we continue to make tremendous progress across our
4 portfolios. We are moving forward from legacy sustainment
5 to modernization and further into operationalizing our new
6 systems.

7 The scope and scale of this modernization effort cannot
8 be overstated. We must be diligent to remain on track as we
9 evolve through all these phases. Any schedule or cost
10 delays would have a cascading effect on the entirety of our
11 modernization efforts and, in turn, on the credibility of
12 our deterrence force.

13 I know you understand the historic situation we find
14 ourselves in as we modernize this nation's nuclear triad,
15 and I am confident for the future, as long as we continue to
16 receive the support and funding necessary to remain on
17 schedule. We have a strong foundation of dedicated people,
18 we have thorough and deliberate plans in place, and we have
19 the systems and development necessary to safeguard our
20 nation for years to come.

21 We are grateful for our partnership with Congress and
22 especially for the continual support of the defense
23 committees. Air Force Global Strike Command remains
24 committed to sustaining our bombers and ICBM forces as we
25 bring Sentinel and a B-21 Raider online.

1 We also remain focused in investing and developing the
2 people of our force with great care, to the enduring legacy
3 of our mission. Our heritage inspires us into the way
4 forward, and we will always be ready to provide convention
5 or nuclear strategic long-range strike anytime, anywhere.

6 I look forward to your questions. Thank you very much.

7 [The prepared statement of General Cotton follows:]

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1 Senator King: Thank you all, and I want to address a
2 question to our general and our admiral, and advise you that
3 what we are looking for at this committee is your best
4 military judgment, not an answer that is tailored to the
5 desires of any particular administration.

6 Two changes in the Nuclear Posture Review. One is the
7 elimination of the sea-launched cruise missile, and the
8 other is the elimination of the B-83-1, the heavy gravity
9 bomb.

10 Admiral, let's talk about Ukraine and the threat that
11 we are all aware of, of Putin using tactical nuclear
12 weapons. Are we making a mistake by cancelling the sea-
13 launched cruise missile, which gives us a comparable
14 tactical weapon in response to potential use? I worry that
15 we could be in a situation where it is mutually assured
16 destruction or no response. Give me your thoughts on the
17 cancellation of the sea-launched cruise missile.

18 Admiral Wolfe: Yes, Senator, thanks for the question.
19 So here is what would say. Sir, I would tell you that in my
20 position I do not advise on requirements to USSTRATCOM nor
21 do I advise OSD on policy, or the Administration. As the
22 acquisition lead, my job actually is to execute any program
23 that the Administration and the Department --

24 Senator King: Yeah, you are the customer. I want to
25 know what you think you need.

1 Admiral Wolfe: Actually I am not the customer, sir.
2 USSTRATCOM is the customer. I am the acquisition leg that
3 once STRATCOM requests their requirements and once policy
4 decides what it is we are going to execute, I actually
5 execute those programs as they Navy's acquisition lead and
6 technical lead on how we would meet those requirements.

7 Senator King: So you do not want to express an opinion
8 on the cancellation of this weapon system.

9 Admiral Wolfe: Sir, my personal opinion would not be
10 something that I would want to share, because again, that is
11 not my role in the United States Navy of advising either one
12 of those organizations on either policy or requirements.

13 Senator King: General Cotton, are you going to give me
14 the same answer on the B-83-1, or do you have a military
15 opinion as to whether we need a bunker-buster of that
16 nature?

17 General Cotton: Senator King, what I would tell you,
18 as the Joint Forces Air Component Commander to STRATCOM --

19 Senator King: Could you speak up a little, General?

20 General Cotton: As the Joint Forces Air Component
21 Commander to the Commander of STRATCOM, what I would like to
22 do is, I would be able to present him with a portfolio of
23 weapon systems of which he can choose. So if that is not in
24 the portfolio, then that is one weapon system that he would
25 be able to choose for planning purposes.

1 Senator King: I think we are going to have to have a
2 different set of generals and admirals.

3 I understand. I am not criticizing you all but I am
4 trying to get at an important policy question, and if you
5 are not the right people to answer then we will have to have
6 another hearing to try to get at that question.

7 Admiral Wolfe, how are we doing on the development of
8 the Columbia-class? For example, have they solved the
9 missile encasement issue, the welding issue that was slowing
10 things down some time ago?

11 Admiral Wolfe: Yes, sir. I would tell you the
12 Columbia program is moving forward. They remain on
13 schedule. To your specific question about the welding
14 issues that we saw early on with the missile tubes, they
15 have made progress. Those tubes are coming out as we
16 predicted. The amount of rework that is required on those
17 tubes continues to go down, and Admiral Scott Pappano, who
18 is PEO SSBN, continues to push that program forward. Yes,
19 sir.

20 Senator King: General Cotton, a similar question. You
21 are going to be engaged in an enormous project in developing
22 the new ground-based deterrent. Give me a picture of where
23 that project stands, what the progress is, and what the
24 calendar looks like.

25 General Cotton: Thanks for the question, Chairman. I

1 am happy to say that GBSD, now known as Sentinel for the
2 weapon system, is in a really, really good place. So I will
3 say it is a megaproject. It is a megaproject. So I do not
4 want to overstate the fact that what we are talking about is
5 not just the replacement of a missile. We are talking about
6 the replacement of the entire weapon system, the Minuteman
7 weapon system.

8 The good news is F.E. Warren is the first base that we
9 have already started to break ground in regards of what we
10 are doing for F.E. Warren, Francis E. Warren in Cheyenne,
11 Wyoming. Everything is on time, on schedule. I am not
12 concerned of what we are seeing right now in regard to the
13 program. The prime contractor is doing a tremendous job in
14 regard to using digital engineering, as far as using open
15 mission systems, as far as digital twins, that they are
16 actually using from the B-21 program as well, and being able
17 to carve out some of the best practices seen there.

18 So I think we are in a really, really good place, sir.

19 Senator King: Are original budget -- not original, but
20 are recent budget estimates holding up?

21 General Cotton: It is, sir. So it is on time and on
22 schedule and on budget at this point. I am very happy about
23 that.

24 Senator King: Thank you, General. Senator Fischer.

25 Senator Fischer: Thank you, Mr. Chairman, and I want

1 to thank all of you gentlemen for the work that you do each
2 and every day, and please thank those that work with you on
3 this. You keep our country safe and you keep our allies
4 safe and secure as well.

5 I am going to give it a shot, what the chairman tried
6 to do. Admiral, I think we know that Admiral Richard, the
7 combatant commander at STRATCOM, has been very forthright in
8 speaking about a deterrence gap and being able to provide
9 his job of providing the President with options that would
10 be at his disposal to counter or to address the threats that
11 we face as a country. And he has been supportive of the
12 option of SLCM. You are aware of that, sir, right?

13 Admiral Wolfe: Yes, ma'am, I am aware of that.

14 Senator Fischer: I will not put you in a bad spot.
15 General Cotton, I will save that for you. You and I had a
16 conversation this morning and I think you answered the
17 chairman in saying that those options are valuable for any
18 commander in chief to have at their disposal in making wise
19 decisions on the defense of our security. Would you agree
20 with that?

21 General Cotton: Yes, ma'am, I would.

22 Senator Fischer: Okay. Thank you. Admiral Richard
23 talks about that deterrence gap and assurance gap, and
24 General Cotton, this morning you were visiting with me about
25 our deterrent and stressing how important it was to have a

1 credible deterrent. I appreciate your emphasis on that,
2 because that really boils it down to being able to have
3 those options for our commander in chief so that he or she
4 can make wise decisions. So I am going to steal that
5 "credible deterrent" from you for the rest of my time here
6 in the United States Senate.

7 General, you know that I am an advocate for
8 recapitalizing our E-4B fleet, and I was very glad to see
9 the Air Force's budget significant resources to developing a
10 replacement. This is an issue that has been studied well
11 over a decade, and the challenging of maintaining an
12 outdated airframe are only getting harder as time passes.

13 Can you talk about the Air Force's plan to replace the
14 E-4B with the Survivable Airborne Operations Center and give
15 your perspective on how important it is that we replace that
16 system?

17 General Cotton: Senator Fischer, that you for the
18 question. It is absolutely critical. As you know, the
19 National Airborne Operations Center, of which the E-4B, the
20 airframe is an older airframe, of which we only have four.
21 Based out of Omaha, Nebraska, now at Lincoln, Nebraska,
22 until the runway is completed. Incredible men and women
23 that fly that mission every single day.

24 I happy to say I think we are in a pretty good place on
25 where we are going to move forward in regard to SAOC, its

1 replacement. I know that it has just recently went through
2 a JROC, as we had kind of restudied what the requirements
3 are. I am happy with the adjustments to the requirements.
4 I think the final product of what we are going to see as far
5 as fleet size is going to be very manageable for the
6 President, for the Secretary, as well as the Chairman,
7 moving forward. So I think we are in a very good place in
8 regard of what we are going to see for the SEOC, ma'am.

9 Senator Fischer: Great. It is a good mission that we
10 have there at Offutt. And when the runway is completed
11 there at Offutt I know that in the future that is an
12 opportunity that we have to expand that mission right there
13 at Offutt Air Force Base as well. So I look forward to
14 working with you on that.

15 As I mentioned in my opening statement, the \$63 million
16 for Minuteman-III sustainment on the Air Force's list of
17 unfunded mandates, that \$63 million. Can you talk about the
18 importance of sustaining the Minuteman-III, both the system
19 and the facilities, and how that helps reduce risk
20 associated with transitioning to the Sentinel?

21 General Cotton: Thank you for the question, Senator.
22 What is very unique is where we are with the nuclear
23 portfolio. Where we are with the nuclear portfolio is we
24 are going to have to maintain our legacy systems until we
25 transition into the new. So that being said, I need to make

1 sure that I have a safe, secure, effective, and credible
2 legacy weapon system as we transition into Sentinel, and
3 that is what the sustainment request is in regard of making
4 sure that we sustain our legacy system, known as the
5 Minuteman-III. We just celebrated its 50-plus years on
6 alert.

7 So by able to do that, we are safeguarding, as a
8 bedrock the for the nation, for our allies and our partners
9 to understand that they have a credible deterrent, one that
10 is still safe, secure, and effective, until we get to the
11 full transition of GBSD Sentinel in the 2036 time frame.

12 Senator Fischer: Thank you. Thank you, Mr. Chairman.

13 Senator King: Dr. Adams, not so long ago I visited Oak
14 Ridge and I came away with two impressions. The people are
15 fantastic. The facilities are pretty tired, and we using, I
16 understand, manufacturing capabilities that literally go
17 back to the '40s. As we move into these major, new projects
18 and the upgrade across the nuclear enterprise, are there
19 plans afoot, and are there activities underway to modernize
20 the manufacturing process at places like Oak Ridge and Los
21 Alamos?

22 Mr. Adams: Thank you. Thank you, Chairman King, for
23 the question. The short answer is yes, we are working on
24 that. The more nuanced answer is we have processes that we
25 know work. They are qualified. They are proven. They

1 produce the product that we know we need. In many cases
2 that product was a warhead that was tested underground.

3 If you change a process to one that, by all measures,
4 looks better, there is a stringent quality standard and
5 certification standard that has to be met, and we have to
6 convince ourselves and skeptical observers that this thing
7 will still work if it we make it a different way.

8 We are doing that, though. We are doing that work to
9 convince ourselves that these things will still work when we
10 make them different ways that are more efficient and that
11 will ultimately give us a greater capacity.

12 Senator King: This is one of the collateral effects of
13 not being able to test. We have to be sure, as you say,
14 that what we are doing, even though it may be a more modern
15 manufacturing capability, will produce equivalent quality
16 results, and that is the direction you are moving in.

17 Mr. Adams: That is the direction we are going.

18 Senator King: General Cotton, in the fiscal year 2021
19 National Defense Authorization Act we required that the new
20 B-21 be capable of hosting a long-range standoff missile to
21 replace the 1980s cruise missile. Is that still in the
22 planning stages? Is that part of a requirement that you
23 accept as part of the B-21 process?

24 General Cotton: So as you mention, as LRSO comes
25 online, of which you mentioned, for the air launch cruise

1 missile replacement, it will be a threshold weapon on the B-
2 52 as well as, since we are going to a two-bomber fleet, as
3 well as have its capability on the B-21 down the road as
4 well.

5 Senator King: I have had several classified meetings
6 on the status of the B-21 process. In an unclassified
7 setting can you give me a bird's eye view? Are we still
8 making good progress, still on budget, and do you feel
9 confident about that process?

10 General Cotton: Sir, I think it is a model acquisition
11 program for the Department. What we are doing and where it
12 is, it is on time. I would love to host you to a couple of
13 facilities so you can kick the tires yourself and see what
14 is happening in regard to its development. I am very
15 satisfied with where we are on the progress of the B-21 program.
16 It is on time and on budget.

17 Senator King: One additional question on the B-21 and
18 that is, to what extent are we developing good estimates,
19 solid recognition of sustainment costs? As you know, one of
20 the problems with the F-35 has turned out to be very high
21 sustainment costs into the indefinite future. Is that a
22 factor in the design and manufacture and contractual
23 relations that are part of the B-21?

24 General Cotton: Absolutely, sir. So we looked to see
25 what kind of did not work there and tried to eliminate all

1 of those for the B-21 program. One is the fact that the
2 modern technologies that we are seeing in the development of
3 this platform, even when compared to how the B-2 was
4 designed, everything is kind of captured in the new, modern
5 ways of how our acquisition partners are developing this
6 platform. So we took all of that into consideration so we
7 would not restage into the past. So that was all taken into
8 consideration for the B-21 program, and I am very satisfied
9 that we will not replot that ground, on what you are talking
10 about with the other weapon systems.

11 Senator King: With the concurrence of my co-chair I am
12 going to cede myself an extra minute. You will get it too,
13 yes.

14 Question for both the admiral and the general, and that
15 is, intellectual property with regard to the B-21 and the
16 Columbia. To what extent will the Department of Defense own
17 the intellectual property so that in the future we can 3D
18 print or otherwise acquire parts rather than having to go
19 through the OEM process? I foresee a day, and hope there is
20 a day when every depot, every hangar, every military
21 facility has its own 3D printing capability, which would be
22 an enormous availability boost. So are we buying the
23 intellectual property on those two programs to the extent
24 that we will be able to create our own parts without having
25 to go back through the manufacturer? General?

1 General Cotton: Chairman King, I am glad you asked
2 that question. That is what makes us very, very proud of
3 the B-21 program. We own the baseline. We own the
4 baseline. So what that does for us, it gives us open
5 architecture. It allows us, understanding that we are
6 designing a weapon system that is going to last for decades,
7 that you can, by having open architecture and owning the
8 baseline, that you do not have to kind of re-haggle, if you
9 will, to do some improvements as the weapon system
10 progresses in its timeline.

11 So I am happy to say that yes, we do own the
12 operational baseline for the B-21.

13 Senator King: Excellent. Thank you. Admiral, how
14 about Columbia?

15 Admiral Wolfe: Sir, although I do not know to the
16 level of how much IP is actually known, because again, that
17 is not in my portfolio, but let me answer it in a different
18 way because I think your question about are we able to get
19 the data that we need to 3D print and do some of that stuff,
20 I would tell you already in the United States Navy and in
21 the Submarine Service we are to the point where we are
22 starting to use 3D printing and we are starting to
23 understand what is available to all of our depot facilities
24 and even to our individual platforms to be able to do that
25 type of real-time maintenance that I think you are really

1 getting at.

2 So I would like to take a question for the record on
3 the actual amount of IP that we are going to own for
4 Columbia. But we are getting after that in many areas.

5 Senator King: I think that ought to be the standard
6 for whenever we are buying something, we get the IP along
7 with the platform.

8 Admiral Wolfe: Yes, sir. I would tell you, in the
9 strategic program that I do manage, back to what General
10 Cotton said, it is the same way. We do own the technical
11 baseline. As a matter of fact, in our program we are the
12 systems integrator. So we do not have a separate entity
13 that does all of the system integration for the entire
14 system. That is the U.S. Navy and that is our program.

15 Senator King: Good. Thank you. Thank you very much.
16 Senator Fischer.

17 Senator Fischer: Thank you, Mr. Chairman. General
18 Cotton, earlier today we spoke about the importance of
19 modernizing the B-52, in particular the CERP, the engine
20 replacement, and the radar modernization programs. It is my
21 understanding the Air Force has changed its acquisition
22 structure for the re-engineering effort. How confident are
23 you that we will be able to complete that project on time?

24 General Cotton: Ma'am, I am very confident. Thank you
25 for the question. What is unique about the program is what

1 I am seeing from the prime. As you know, we have just let
2 that contract for the engine replacement for the B-52, the
3 Civilian Engine Replacement Program, known as CERP, and
4 Rolls-Royce was awarded that contract.

5 The integration efforts that we are already beginning
6 to see with our contractor, Boeing, on being able to
7 integrate that engine as well as the other upgrades that
8 will come along with that engine upgrade is short of
9 fantastic. You probably have even seen on the news where we
10 were able to take a bird from the boneyard. They actually
11 split it in half, from nose to tail, and kept the left side
12 of the jet. It is in a warehouse in Tinker right now, where
13 they can form-fit as they do integration with -- no kidding
14 -- a jet. So that is the innovative thinking that they are
15 thinking through, because even using 3D technology on your
16 computer does not replace having an airman or a maintainer
17 kind of say, "Hey, engineer, that is probably not the right
18 place to put that component, because now I do not have
19 access to it," as they are doing the integration piece. So
20 I am very, very satisfied in what I am seeing with the CERP
21 program.

22 You also mentioned the radar modernization program.
23 Radar modernization program is also going to be very, very
24 instrumental for the B-52 as it gets at some of our faults
25 that we see in our radar systems currently and upgrades the

1 radar system there.

2 I would like to talk a little bit about CERP, if you do
3 not mind, on what it brings to the fight.

4 Senator Fischer: Can I first ask you a question about
5 the radar system that you are modernizing?

6 General Cotton: Yes, ma'am.

7 Senator Fischer: I do not know if you can discuss it
8 in an unclassified setting, but can you share the mean time
9 between failure for the current radar system?

10 General Cotton: Yes. It should around 300 and it is
11 sitting around 46 right now.

12 Senator Fischer: Okay. And then if you want to just
13 do briefly on CERP so I can ask the admiral and Mr. Adams
14 questions as well.

15 General Cotton: Well, part of the two-bomber fleet
16 that we are going to have here in the United States Air
17 Force with the B-21 and the B-52, the B-52 is going to be a
18 formidable standoff, long-range strike weapon through 2050,
19 and I am very confident, as much as folks talk about the B-
20 52 and its age, once we do this upgrade she is going to be a
21 very formidable weapon system through 2050.

22 So I am really looking forward. I just need to make
23 sure that the funding stays steady so we can get that done,
24 because the limiting factor for the B-52 is its current
25 engines that are sitting on it right now. So we must

1 replace the engines on the B-52. Thank you, Senator.

2 Senator Fischer: Good. It is important to know that
3 we not only stay on schedule but the funding, like you said,
4 is steady and we do not see the peaks and valley. Thank
5 you.

6 Admiral Wolfe, thank you for everything that you, as I
7 said earlier, that you do and that your team does. I would
8 like to revisit some of our discussion yesterday about your
9 life extension efforts with the LE2, for the Trident
10 missile. Can you talk about how reductions to the program
11 increase long-term risk and make your ability to meet the
12 delivery date more challenging?

13 Admiral Wolfe: Yes, Senator. Thank you for the
14 question. I will expand a little bit to our discussion from
15 yesterday.

16 Every time we do not get budgeted to our request we
17 have a very tight timeline. We understand the technologies
18 that not only we need to re-invigorate today to make sure
19 that our system and LE2 gets to where we need to get but
20 there are also technologies that we need to develop.
21 Because as we all talked about, our strategic competitors
22 have changed -- we have gone from one to two -- how we look
23 at these systems, some of the requirements that we talked
24 about.

25 Every time that we take a decrement it causes us to

1 either give up on a technology, which means we are going to
2 rely on something that is not going to be cutting edge
3 because we have got to maintain schedule, because we are
4 very tight in making sure that we continue to support our
5 portion of the triad, or we push that, when then reduces the
6 amount of time we have to really develop that technology,
7 develop the workforce to understand that.

8 So the most important thing to us is keeping the
9 stability so that we can stay on schedule, we can develop
10 the technologies to meet not just today's requirement but
11 where we need to be in the future as we continue to watch
12 things evolve.

13 Senator Fischer: We certainly do not want to underfund
14 these programs and have it end up like a lot of
15 modernization programs that we are looking at right now,
16 where there is no room. There is no room for delay. And we
17 all know that things can happen that would put production
18 into delaying situation, and I certainly do not want it to
19 be because we have not funded at the proper levels. So
20 thank you.

21 Mr. Adams, we have focused primarily on plutonium pit
22 production over the last few years. Can you update on
23 NNSA's other challenges with respect to strategic materials
24 and discuss what you see as the next major challenge after
25 pit production?

1 Mr. Adams: Thank you for the question, Senator
2 Fischer. I do not know that I would say "after" because we
3 have to do these things simultaneously. So the lithium
4 facility at Y-12 comes to mind. Of course, we have to
5 finish the uranium processing facility. There is a tritium
6 facility that is needed at Savannah River. There are high-
7 explosive facilities that are needed at Pantex. All of
8 these things are underway. They are all in flight now, and
9 we have to have all of them in order to do the modernization
10 work that we are asked to do, and deliver the warheads that
11 DoD needs.

12 Senator Fischer: When we look at the expansion, I
13 believe it is production at the TVA's Watts Bar Unit 2. Is
14 that expansion going to be sufficient to meet our long-term
15 needs?

16 Mr. Adams: Thank you for that question. That is where
17 we make our tritium. It is actually Watts Bar Unit 1 and
18 Unit 2 now. We have both of those going. We put 1,792
19 tritium-producing, burnable absorber rods in each core. We
20 can go up to that much at this point. And that will meet
21 the needs of the program for tritium as long as there are
22 not serious interruptions.

23 So we have a good thing going. We have demonstrated
24 all the way through the extraction at Savannah River and the
25 placement of the tritium into gas transfer systems. So my

1 view is that that program is doing a great job right now.
2 We could use more margin, and our team is now looking at
3 putting more burnable absorber rods in each of those cores
4 in Unit 1 and Unit 2. We are looking at licensing
5 amendments that would allow that in case we need it later.

6 Senator Fischer: Okay. Thank you very much. Thank
7 you, Mr. Chair.

8 Senator King: I want to thank all of our witnesses.
9 This has been a very informative hearing. I appreciate the
10 testimony both from our first panel and our second panel,
11 the answer to our questions. Thank you very much. We
12 looking forward to continuing to work with you on these
13 important topics.

14 The hearing is adjourned.

15 [Whereupon, at 6:01 p.m., the subcommittee was
16 adjourned.]

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