

Stenographic Transcript
Before the

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

TO RECEIVE TESTIMONY ON THE DEPARTMENT OF ENERGY
NATIONAL NUCLEAR SECURITY ADMINISTRATION ON
ATOMIC ENERGY AND DEFENSE ACTIVITIES IN REVIEW OF
THE DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR
2022 AND THE FUTURE YEARS DEFENSE PROGRAM

Thursday, June 24, 2021

Washington, D.C.

ALDERSON COURT REPORTING
1111 14TH STREET NW
SUITE 1050
WASHINGTON, D.C. 20005
(202) 289-2260
www.aldersonreporting.com

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9 U.S. Senate

10 Committee on Armed Services

11 Washington, D.C.

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13 The committee met, pursuant to notice, at 9:00 a.m., in
14 Room SD-G50, Dirksen Senate Office Building, Hon. Jack Reed,
15 chairman of the committee, presiding.

16 Committee Members Present: Senators Reed [presiding],
17 Gillibrand, Kaine, King, Warren, Manchin, Rosen, Kelly,
18 Inhofe, Wicker, Fischer, Rounds, Ernst, Tillis, Scott,
19 Blackburn, Hawley, and Tuberville.

1 OPENING STATEMENT OF HON. JACK REED, U.S. SENATOR FROM
2 RHODE ISLAND

3 Chairman Reed: I would like to call the hearing to
4 order.

5 The committee meets today to receive testimony on the
6 Department of Energy's atomic energy defense programs in
7 review of the fiscal year 2022 President's defense budget
8 request. I would like to welcome our witnesses, Secretary
9 of Energy Jennifer Granholm and Acting Administrator of the
10 National Nuclear Security Administration, Dr. Charles
11 Verdon. Thank you for joining us. I also want to thank the
12 workforce for their service to the nation.

13 The fiscal year 2022 budget request for the defense
14 functions of the Department of Energy is \$27.9 billion.
15 This figure accounts for about 60 percent of the Department
16 of Energy's overall \$46.2 billion request. Having the
17 Secretary of Energy appear before us underscores the
18 importance that this committee places on oversight of the
19 Department of Defense activities, which span from
20 maintaining our nuclear stockpile to cleaning up former Cold
21 War defense production sites in order to meet binding
22 commitments between the Federal Government and the
23 communities and states they reside in.

24 Within this \$27.9 billion defense proposal, the
25 National Nuclear Security Administration, or NNSA, is

1 requesting \$19.74 billion, or a 0.5 percent increase over
2 last year's level of \$19.73 billion. While the fiscal year
3 2022 budget is flat, I would note that the amount for
4 environmental cleanup increased by 6.4 percent to a total of
5 \$6.8 billion.

6 Madam Secretary, given this flat NNSA budget there will
7 be tradeoffs within the remaining budget to meet ongoing DOD
8 requirements. I would like to know what these offsets are
9 and what impacts they will have. Our analysis shows that
10 maintenance of long-term engineering and science programs
11 decreased 4.4 percent. Funds for infrastructure and
12 operations, particularly safety, decreased by 12.3 percent.
13 There is a view that there are carryover monies in
14 infrastructure that can be spent in these areas, but this
15 committee has too often found that using carryover funding
16 simply pushes today's important infrastructure problems to
17 subsequent years, where they inevitably grow in magnitude.

18 With respect to DOD requirements, I would appreciate an
19 update on how the NNSA is working with the Nuclear Weapons
20 Council. The committee spent considerable time last year
21 ensuring the relationship between the Department of Energy,
22 the NNSA, and the Nuclear Weapons Council was on the right
23 footing. I will want to know your views on this matter, as
24 it is an important issue.

25 The NNSA has also experienced its highest workload

1 since the 1980s, as it manages five major warhead programs
2 while rebuilding nuclear infrastructure that is original to
3 the Manhattan Project of 70 years ago, and I am interested
4 in how NNSA is managing this workload and the status of
5 modernization of the facilities.

6 I would also ask that our witnesses share how the NNSA
7 is meeting the requirement for plutonium pit production.
8 This administration has endorsed a two-site solution for
9 producing pits at Los Alamos and rebuilding the abandoned
10 mixed oxide facility at the Savannah River site. I would
11 like to know what issues you see in the coming year for both
12 sites with respect to cost and meeting production
13 requirements.

14 Finally, Madam Secretary, I hope you will update us on
15 your efforts to continue cleaning up former Defense
16 production sites, particularly at the Hanford Nuclear
17 Reservation. As you are aware, the Hanford site has 55
18 million gallons of radioactive waste stored in 177
19 underground tanks, some of which are leaking. Although your
20 Department is starting operations to remove the first 40
21 percent of low-activity radioactive waste from these tanks,
22 which accounts for 90 percent of the waste, at present there
23 is no plan to remove the high-activity radioactive waste in
24 the tanks. I would ask you share how you are working with
25 the State of Washington on a plan to remove this highly

1 radioactive waste.

2 Again, I want to thank our witnesses for appearing
3 today and for their distinguished service to the nation in
4 so many different ways.

5 Now let me recognize the ranking member, Senator
6 Inhofe, please.

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1 STATEMENT OF HON. JAMES INHOFE, U.S. SENATOR FROM
2 OKLAHOMA

3 Senator Inhofe: Thank you, Mr. Chairman. Over the
4 past few years one of the committee's top priorities has
5 been ensuring that we rebuild our U.S. nuclear deterrent,
6 the cornerstone of our national security. We have talked
7 together, and I think we are all in agreement on that.

8 I think Secretary Austin said it well when he told us,
9 quote, "The U.S. nuclear weapons have been extended far
10 beyond their original services lives, and the tipping point
11 where we must simultaneously overhaul these facilities is
12 now here. It is actually beyond here.

13 If we are serious about meeting that growing and
14 underappreciated threat posed by China and Russia, we need
15 to be honest about the resources needed to do so, and repair
16 these resources, which we will talk about in a minute.

17 Unfortunately, the administration's fiscal year 2022
18 DOD budget cuts spending when we need real growth. We
19 simply cannot compete if our budgets do not support our
20 strategy. Strategy by starvation is a recipe for disaster.

21 We have that same problem with this year's NNSA budget.
22 For the first time since 2013 -- this is significant -- for
23 the first time since 2013, the NNSA request has shrunk from
24 the previous year, mostly because of a \$500 million cut to
25 NNSA deferred maintenance efforts. Deferred maintenance is

1 kind of a less-than-courageous way of doing something
2 without being caught. I think we all understand that.

3 If this were the result of real progress in modernizing
4 our nuclear weapons stockpile, that would be one thing. But
5 that is not the case here. We are still trying to recover
6 from decades of underinvestment. We must rebuild our aging
7 nuclear forces.

8 I cannot understand why the administration is cutting
9 NNSA funding while pushing for trillions of dollars in
10 spending in so many other areas, less critical areas, such
11 as so-called "green energy" subsidies. Almost a third of
12 NNSA's facilities date back to World War II, and we have
13 buildings where chunks of the concrete fall from the ceiling
14 on workers below. We need to do better for the people who
15 care for our nuclear enterprise.

16 By contrast, our adversaries clearly prioritize their
17 nuclear programs. They understand their value. Our lack of
18 focus on nuclear weapons puts us in danger of falling even
19 farther behind, and puts our nation at risk, and we cannot
20 allow this to happen.

21 So I look forward to your testimony of these two great
22 witnesses. Thank you, Mr. Chairman.

23 Chairman Reed: Thank you very much, Senator Inhofe.
24 Madam Secretary, you are recognized, please.

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1 STATEMENT OF HONORABLE JENNIFER GRANHOLM, SECRETARY OF
2 ENERGY

3 Secretary Granholm: Thank you so much, Chairman Reed
4 and Ranking Member Inhofe and members of the committee. It
5 is a privilege to be before you on behalf of the Department
6 of Energy as the nation's 16th Energy Secretary. I am
7 unspeakably honored to be entrusted with the responsibility
8 of enhancing America's security through nuclear defense,
9 nonproliferation, and environmental efforts, in addition to
10 leading the Department's efforts to support the breakthrough
11 scientific discoveries at our 17 National Labs and to deploy
12 those breakthroughs at scale to create jobs for the American
13 people.

14 As we endeavor to build America's clean energy future
15 we know the Department's nuclear security mission is
16 essential to ensuring that future is safe and secure. It is
17 a core focus of our daily work, and I recognize that the
18 Senate Armed Services Committee has always demonstrated
19 bipartisan commitment to this mission. I applaud your
20 ability to consistently work together on such serious
21 matters and your continued support for the Department's
22 efforts around deterrence and on proliferation and
23 environmental management, which, of course, together make up
24 nearly three-quarters of the Department of Energy's budget.

25 We know full well that as long as nuclear weapons exist

1 the United States must maintain the safety, security, and
2 effectiveness of our nation's nuclear stockpile. We have to
3 make sure that the U.S. Navy has the nuclear propulsion that
4 they need to carry out their important operations, and we
5 must also advance nuclear nonproliferation intentionally,
6 and we have to do it internationally. We have to address
7 the threat of nuclear terrorism, we have to mitigate the
8 environmental harm from our nuclear program, and to those
9 ends, I am pleased to report that since I have taken office
10 the Department and the NNSA have reinforced a strong working
11 relationship, prioritizing collaboration and communication,
12 while respecting NNSA's semi-autonomous status.

13 Here I do want to thank our colleagues at the NNSA, and
14 in particular Acting Under Secretary Dr. Charlie Verdon, who
15 is here and whose incredible vast experience and expertise
16 has been invaluable to our nuclear security mission. And I
17 want to thank this committee for having advanced Dr. Jill
18 Hruby and Frank Rose to the next level, and hopefully the
19 Senate can follow your lead, given the importance of this
20 mission.

21 Working together with NNSA and DOE, we have reached
22 several notable milestones over the last 5 months, and that
23 includes our support for diplomatic efforts to successfully
24 extend the New START nuclear arms control treaty with
25 Russia, and our progress around the Los Alamos plutonium pit

1 production project, which is now underway, and which will
2 produce 30 war-reserved plutonium pits per year to meet our
3 national security needs. We have also moved forward on a
4 series of upgrades that are essential to the nation's
5 nuclear deterrent, and our work is further facilitated by
6 our exceptional partnership with the Department of Defense.
7 You will be glad to know, I hope, that DOE and NNSA and DOD
8 are engaging in high-level coordination, and we are in
9 lockstep around our mutual goal of ensuring that the U.S.
10 nuclear deterrent is fully funded and properly managed.

11 I will note also that we are fully aligned with the
12 Department of Defense regarding the budget for this next
13 fiscal year, which meets DOD requirements. I am fully
14 committed to working in close cooperation and coordination
15 with the Defense Department on the future budget
16 requirements.

17 The budget proposal before you would allow us to make
18 substantial progress in five areas. One, it would sustain
19 funding for NNSA in support of the agency's longstanding
20 nuclear modernization efforts. Second, it would support our
21 weapons account activities, and that means allowing us to
22 keep the nation's stockpile and infrastructure in line with
23 DOD requirements. Third, it will enhance our Office of
24 Defense Nuclear Nonproliferation, so that we can ramp up our
25 work to prevent state and nonstate actors from achieving

1 their ambitions around nuclear weapons. Fourth, it provides
2 the resources needed to support the U.S. Navy with
3 militarily effective nuclear propulsion plants, and ensure
4 they are safe and reliable and long-lived operation. And
5 fifth, importantly, it would allow our Office of
6 Environmental Management to advance our commitments to the
7 communities that have supported national defense programs
8 and nuclear research and facilitating continued progress
9 along all 16 of our cleanup sites.

10 Before I close I do want to acknowledge that we know,
11 following the attacks on the grid and on the pipeline, with
12 SolarWinds and the Colonial Pipeline, that we face this
13 national security imperative to harden our critical
14 infrastructure against these evolving cyber threats as well.

15 So I am humbled by the opportunity to lead the
16 Department of Energy in this moment, and I am happy to
17 discuss our priorities and our goals with this committee,
18 and answer any questions that you may have.

19 [The joint prepared statement of Secretary Granholm and
20 Mr. Verdon follows:]

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1 Chairman Reed: Well, thank you, Madam Secretary. Dr.
2 Verdon, do you have a statement?

3 Mr. Verdon: No, sir. Not at this time.

4 Chairman Reed: Well, thank you very much. Let me
5 begin with the Secretary. Once again, thank you for your
6 service in so many ways to the nation. I deeply appreciate
7 it.

8 As I mentioned in my opening statement, last year the
9 committee spent a great deal of time trying to iron out the
10 relationship with the Department of Defense and the Nuclear
11 Weapons Council, and from your perspective, is that process
12 working now? Are we getting a full, integrated conclusion
13 from both Defense and Energy?

14 Secretary Granholm: I am happy to say that it is, sir.
15 It is very intentional. We are absolutely working hand-in-
16 glove and are coordinated in our goals, our approach, and in
17 the budget.

18 Chairman Reed: Well, thank you, Madam Secretary.

19 Dr. Verdon, plutonium facility construction costs are
20 about \$20,000 to \$25,000 per square foot, on average, based
21 on what you have been doing out at Los Alamos. In 2018, you
22 performed an engineering study in which Los Alamos
23 originally proposed a modular 25 [sic]-square-foot building
24 to be built next to their plutonium facility, at roughly \$5
25 billion. And early the Nuclear Weapons Council approved

1 this approach.

2 That was one approach, but the administration is firmly
3 committed now to two facilities, one in Savannah and one in
4 Los Alamos. But the facility in Savannah's cost growth has
5 gone from \$4.6 billion to \$11 billion. And I wonder,
6 looking at the metric of square feet and what you have done
7 in Los Alamos, are you considering applying the same type of
8 production to Savannah to lower costs, or alternatives to
9 try to lower costs?

10 Mr. Verdon: Sir, we are looking at -- the original
11 cost of \$4.2 was really a top-down estimate. The present
12 cost we have now are the first time the subject matter
13 experts have actually built a bottoms-up cost. So, you
14 know, the costs are actually comparable now to the Los
15 Alamos project also. So there is quite a bit of consistency
16 between the two.

17 But we still find that the two-site solution is the
18 most schedule- and cost-efficient way for us to reach the 80
19 pits a year, because as you mentioned, to do 80 pits at one
20 site would require a whole new facility to be built, which
21 would add years and quite a bit of money to build that
22 facility. We are finding that the approach that we are
23 using for MOX and Los Alamos are very consistent, and all of
24 the latest information we have, which is basically the best
25 we have had since we started this, still indicates that this

1 is the best path to reach the 80 pits per year that the DOD
2 has identified.

3 Chairman Reed: So roughly the square foot cost at
4 Savannah will be equivalent to the cost at Los Alamos?

5 Mr. Verdon: It look a little different from the point
6 that the Los Alamos Plutonium Facility-4 actually has a lot
7 of the infrastructure already in the building, where the MOX
8 facility, we will have to install a lot of the environmental
9 equipment that is already present at Los Alamos, we will be
10 installing it. So when you take that into account it would
11 look more, but it is going to be, effectively, if you try to
12 neutralize all that they are very consistent. In fact, we
13 utilized the information that we obtained from installing
14 the equipment for 1 to 10 pits already at Los Alamos to
15 inform the costs of both sites.

16 Chairman Reed: Thank you. Let me ask another
17 question, Dr. Verdon. NNSA has been directed by the Nuclear
18 Weapons Council to begin exploratory studies of submarine
19 warhead to be sealed in the mid-2030s, and my understanding
20 is that this effort is being undertaken with the United
21 Kingdom. Can you, in this open session, describe what
22 activity we will be participating with in the United
23 Kingdom, and the necessity for this weapon system?

24 Mr. Verdon: Well, the necessity, I would say you would
25 have to speak to the STRATCOM Commander for that, because he

1 sets those requirements. But our work with the United
2 Kingdom, which is an independent development of their
3 warhead, we tried to synergistically leverage each other's
4 abilities to make sure that we have the highest confidence
5 that both systems will work. And where they integrate is
6 more back into, again, the Navy, so Admiral Wolfe, when it
7 comes to integrating on the missile. So that is why it is
8 necessary for us to work closely together to make sure that
9 both what we build for the United States and what they build
10 for their country will function correctly on the missiles,
11 which are common.

12 Chairman Reed: Thank you very much. Again, Madam
13 Secretary, Dr. Verdon, thank you very much.

14 With that I would recognize the ranking member for his
15 questions. Senator Inhofe.

16 Senator Inhofe: Okay, that is good. Thank you. Thank
17 you, Mr. Chairman. We are putting this exhibit up. I know
18 you have both seen it, and you are very familiar with it.
19 But we want to make sure it is in view of the camera and
20 make sure that everyone understands what we are trying to
21 say here.

22 Last summer, the previous NNSA administrator testified
23 that more than a third of the NNSA's facilities are over 60
24 years old. We know that, and we have heard that, and that
25 is a problem.

1 Secretary Granholm, I would first ask you, have you
2 personally seen and witnessed and toured these facilities?

3 Secretary Granholm: No, I have not yet because of the
4 COVID restrictions, but I look forward to doing so.

5 Senator Inhofe: Yes. I knew that was your answer, and
6 I know that is right, and you and I talked about this so I
7 wanted to ask you on the record. Will you personally do
8 that?

9 Secretary Granholm: Absolutely, Senator.

10 Senator Inhofe: That is good. That is good. When our
11 adversaries are rapidly building up their nuclear arsenals,
12 why would be cutting the funding of our basic facility
13 maintenance?

14 Now everybody knows that during the last administration
15 there was a problem, a relational problem, between your
16 predecessor and me and some of the others up here. I want
17 to make sure that we all want to do the same thing, and from
18 our conversations I believe that we do, and I am looking
19 forward to a great relationship, unlike the previous
20 administration's relationship with me.

21 Dr. Verdon, you are an expert. In the past year's
22 NNSA, official stated that they need real sustained growth
23 every year to keep the nuclear modernization on track. How
24 will flat or reduced budget affect the NNSA ability to meet
25 the DOD requirements over time, should that be the case?

1 Would you expand on that a little bit, on what would be the
2 effect if we failed to come up with the right approach to
3 this?

4 Mr. Verdon: Yes, sir. So when we put the 2022 request
5 together we took a hard look at all of the requirements as
6 we understood them, and, you know, given to them by the
7 Department of Defense and what we had to do to meet those
8 requirements. We did the best risk balancing that we could
9 across the complex. We ensured that the warheads got the
10 funding that they absolutely needed, that the major facility
11 modernizations got the funding that they absolutely needed.

12 And in the area of infrastructure and operations, what
13 we looked at there that was one of the areas during the
14 COVID pandemic that we actually had to do some slowdowns.
15 And so we recognize that we will have higher than usual
16 carryovers in those areas. So that is why we reduced some
17 of the requests that we originally were thinking about. We
18 reduced them in recognition of the fact that we just could
19 not put the number of people necessary within the square
20 footage to get the work accomplished in a safe and effective
21 manner.

22 So that was one of the reasons we lowered the request
23 from some initials, was just the realization that COVID had
24 a larger impact in that area. But again, we think we can
25 accomplish -- you know, we are working with the sites, that

1 we can accomplish all of the work required to keep the
2 infrastructure moving forward. As I say, all the major
3 facility modernizations are supported, and so that was a lot
4 of the thinking.

5 And then the other important area in the infrastructure
6 modernization that looks like an artificial downturn is that
7 the uranium processing facility is at its highest funding in
8 fiscal year 2021, and it is beginning its natural roll-off
9 in fiscal year 2022. So that almost accounts for \$100
10 million or more of the reduction in fiscal year 2022, is
11 just that natural roll-off that is beginning at the uranium
12 processing facility.

13 I think the important message is we believe we can
14 accomplish, with the budget request as presented, all of the
15 key things that we have to do in fiscal year 2022.

16 Senator Inhofe: Dr. Verdon, it is understandable some
17 of the things that we had to go through during the pandemic,
18 and we do understand that, and we understand the results of
19 that. But now we are out of that and we are on our way, and
20 would you agree with the statements that I made about our
21 adversaries, what they have been doing, and the necessity
22 for us to get back in the game?

23 Mr. Verdon: Yes, I agree. I mean, your pictures are
24 worth 1,000 words. We have a lot of infrastructure work to
25 do, and as I say, we kept a major focus on the modernization

1 because that, in some sense, is deferred maintenance as
2 well. Some of the buildings, the faster we can replace
3 them, the better off we are, instead of putting money to try
4 to keep old buildings functioning.

5 Senator Inhofe: In your background, have you ever seen
6 more deplorable conditions than we are witnessing here?

7 Mr. Verdon: Some of those buildings, they are eye-
8 opening to go through them, and that is some of the
9 challenges we face is still trying to keep them functioning.
10 The sites are commended for still accomplishing the work in
11 some of those facilities.

12 Senator Inhofe: Well, I thank both of you, and thank
13 you, Mr. Chairman.

14 Chairman Reed: Thank you, Senator Inhofe. Let me
15 recognize Senator Kaine, please.

16 Senator Kaine: Thank you to the chair and ranking
17 member, and thank you to the witnesses for your service, and
18 especially Governor Granholm and I served together as
19 governors, and it is a real treat to see you here before the
20 committee.

21 A concern that I had in the previous administration was
22 a policy that is known as Part 810 authorizations, when the
23 United States -- Part 810 describes a process by which the
24 United States vets and then approves the transfers of
25 sensitive nuclear technology to other nations. It had long

1 been the practice of administrations of both parties that
2 when Part 810 agreements were reached, and limited transfers
3 of sensitive nuclear technology to other nations was
4 allowed, that the administrations would notify Congress of
5 that fact.

6 The Part 810 process involves DOE and other agencies,
7 looking at the request for the transfer of nuclear
8 technology, and it involves signoff by a number of agencies,
9 including the DOE.

10 During the past administration, there began to be a
11 practice which I believe was unprecedented, of the U.S.
12 government doing transfers of sensitive nuclear information
13 to other nations, and in particular, to Saudi Arabia,
14 without Congress being notified. At a hearing, I believe it
15 was 2 years ago, when we had Secretary Kerry before us, I
16 asked him about such transfers, and in particular were
17 transfers being made to Saudi Arabia, and in extreme
18 particularity, were we transferring nuclear technology to
19 Saudi Arabia after the assassination by the Saudi Arabian
20 government of Virginia resident and Washington Post
21 journalist, Jamal Khashoggi.

22 I was not given an answer about that at the hearing. I
23 was promised information about it, and it took a very, very
24 long time for me to finally get the information from the
25 administration, and I give credit, actually Senator Jim

1 Risch, then chair of the Senate Foreign Relations Committee,
2 eventually helped me get this information.

3 But what I was hoping, Madam Secretary, is that you
4 would commit to us that the Biden administration would
5 return to past practice, and when there is a decision made
6 by the administration to transfer sensitive nuclear
7 technology to other nations that Congress be informed of
8 that. It does not seem to be too much to ask for the SAS
9 Committee, the Intel Committee, the Foreign Relations
10 Committee, and others to know if we are transferring
11 sensitive nuclear technology to other nations.

12 So just a bottom-line question, could you tell us that
13 you will return to past practice and keep Congress informed
14 when Part 810 authorizations are being utilized to transfer
15 nuclear technology to other nations?

16 Secretary Granholm: Yes, Senator. You have my word.

17 Senator Kaine: Thank you. Mr. Chair, I yield back.

18 Chairman Reed: Thank you, Senator Kaine. And now let
19 me recognize Senator Rounds, please. Excuse me, Senator
20 Rounds, but Senator Fischer is on Webex. Senator Fischer
21 via Webex, please.

22 Senator Fischer: Thank you, Mr. Chairman. Dr. Verdon,
23 what lessons do you think we can learn from our recent
24 experience with pit production? I know this has been an
25 objective since Rocky Flats closed in 1989. It was part of

1 President Obama's modernization commitment that he made with
2 the New START Treaty. But CMRR was cancelled in 2012, and
3 NSA did not begin its analysis of alternatives for follow-up
4 options until 2016. That analysis failed to select a
5 preferred alternative. It was followed by a subsequent
6 engineering analysis, and finally, after 2 years of study,
7 NNSA selected its current approach, which we are now
8 discovering is not going to make the deadline for
9 production.

10 Clearly the challenge we faced was underestimated.
11 [Inaudible] about having time to spare they were wrong.
12 What do we do differently to make sure that this does not
13 happen again?

14 Mr. Verdon: Thank you for the question. It is a very
15 good question that we are actually working very hard on. We
16 are trying to follow a very rigorous process for when we
17 identify requirements to when we actually commit to doing
18 the actual construction. And what we are finding is we have
19 to find a way to improve the fidelity of the information we
20 have earlier in the project, because, you know, we are
21 pushing through on the pit production, and when we achieved
22 Critical Decision 1 that is only 30 percent design complete.
23 Critical Decision 2 is when we get to 90 percent design
24 complete.

25 What we are trying to figure out is how to get more of

1 that information up front without committing the country yet
2 to a final decision and making sure that we bring to the
3 country all of the right options still. So we are trying to
4 walk that fine line of how to improve the fidelity of the
5 information, and the costing information, scheduling
6 information earlier, but literally what we are finding is
7 takes doing the detailed design work, because all of these
8 facilities are unique, one-of-a-kind. That is both good
9 news and bad news. It is good news that there are not too
10 many of these around the world, and it is rougher news from
11 the point of view that they are not commodity, they are not
12 off the shelf. Each one is unique.

13 But we are working and we recognize it is an area where
14 we have to improve on how to bring higher fidelity
15 information earlier into the process rather than later,
16 which is how we are doing it right now, as we improve the
17 fidelity as we go along.

18 Senator Fischer: Thank you very much. Madam
19 Secretary, I know this predates your tenure, but you are in
20 a position to apply the lessons learned and ensure that we
21 do not repeat these mistakes. So I would also like to hear
22 your views on this.

23 Secretary Granholm: Well, I obviously defer to the
24 expertise of the gentleman to my left, because his knowledge
25 and his management of the production and the time frame and

1 the estimates are well grounded in his experience. And I
2 just have to say that, you know, as the Energy Secretary,
3 the relationship between NNSA and DoE and the sharing of
4 information like this has been incredibly important for me,
5 just as a starting matter, but also the pledge to continue
6 to work closely with NNSA, in my learning of the production
7 challenges, the estimate challenges, the managerial
8 challenges, the personnel recruitment issues that NNSA is
9 experiencing, which is reflected across society, frankly.

10 Senator Fischer: Very good. Good to hear. Thank you.

11 Also, Secretary Granholm, Section 179 of Title 10
12 requires that the Nuclear Weapons Council, to make
13 certification regarding the adequacy of NNSA's budget, the
14 certification is required to be submitted with the budget,
15 and that was released on May 28th, but this committee has
16 still not received it. I understand the budget process this
17 year is irregular, but let me ask you this. We have DOE and
18 NNSA, have they begun discussions with members of the
19 Nuclear Weapons Council about next year's budget, so that
20 the Council is in a position to provide a certification when
21 it is submitted to Congress, as required?

22 Secretary Granholm: Oh yes. We have been in lots of
23 discussions with the Council about the budget that you are
24 considering. I believe they are going to be certifying that
25 budget, and clearly we will continue those conversations

1 going into the next year after this.

2 Senator Fischer: Thank you very much. Thank you, Mr.
3 Chairman.

4 Chairman Reed: Thank you, Senator Fischer. Senator
5 Rosen must preside, so I want to thank Senator King for
6 yielding. Senator Rosen, you are recognized.

7 Senator Rosen: Thank you, Senator King, and thank you,
8 Chairman Reed and Ranking Member Inhofe, and I appreciate
9 both your service and being here today.

10 I want to quickly talk about the Nevada National
11 Security Site and our infrastructure needs, because when I
12 last visited there I saw the ongoing construction project at
13 the Ula facility for enhanced capabilities for the
14 subcritical experiments that we do there, the ECSE. I am
15 excited that Nevada National Security Site was going to
16 house the most capability weapons radiographic system in the
17 world.

18 So Dr. Verdon, could you provide us with an update on
19 the upgrade to the ECSE facility at the Ula complex and tell
20 us how the new facility will improve our Stockpile
21 Stewardship Program's scientific capabilities, including a
22 very important understanding of plutonium?

23 Mr. Verdon: Yes. We are moving forward, as you say,
24 with the ECSE, which is really two parts. One is actually
25 the construction of the underground facility, which is

1 moving forward and is meeting all of their objectives, and
2 the development of the radiographic equipment, which is also
3 making progress on schedule. So the project is one of our
4 highest-focused areas and the labs and sites are working
5 very hard to make sure that that is met.

6 And yes, it will be a world-class facility when
7 completed, and it will give us information that we just have
8 not had access to since we did nuclear tests. And so this
9 is a key technological advancement in that regard, and will
10 actually decrease the technical need to ever return to
11 testing once we complete this facility.

12 Senator Rosen: And so now that you have said that I am
13 awfully concerned that the President's budget request
14 proposes an 11 percent cut to the Nevada National Security
15 Site. So how is that going to impact the critical mission
16 that we are going to have, that we have there, ongoing and
17 into the future, and maintain our superiority?

18 Mr. Verdon: Yes, so the funding to all the critical,
19 you know, the high-priority areas has been maintained.
20 There are a few areas that we completed projects and we
21 rolled them off. But there are others that are going to be
22 starting soon. But all of the major projects, like utility
23 upgrades and the ECSE and other activities have all been
24 funded at the requisite and required levels.

25 Senator Rosen: Thank you. I would like to move on to

1 you, Secretary Granholm, and talk a little bit about the
2 plutonium removal. In fall of 2018, the Department of
3 Energy secretly--secretly--shipped one half a metric ton of
4 weapons-grade plutonium from South Carolina to the Nevada
5 National Security Site. As part of an effort to restore
6 trust with the people of Nevada, NNSA committed to begin
7 that removal of the material no later than 2021, completing
8 the removal by 2026.

9 Can you provide us with an update on the plan to remove
10 the plutonium, and I do understand that one-half metric ton
11 of this plutonium will be used for pit production activities
12 at Los Alamos, and so I know it is critical that it gets
13 there, Secretary.

14 Secretary Granholm: Yes. The commitment that we made
15 with the state stands. We will remove, and continue to
16 remove that plutonium, consistent with that agreement.

17 Senator Rosen: And Dr. Verdon, can you -- if you
18 cannot do it now, can you provide to the committee in
19 writing an update on the status of Los Alamos achieving
20 their 30 pits per year, and how this does rely on the
21 materials being transported from the Nevada National
22 Security Site?

23 Mr. Verdon: We will be happy to do so.

24 Senator Rosen: Thank you. And the last question I
25 have is about radioactive waste shipments, because in 2019,

1 Nevada learned that the Department of Energy had been
2 shipping incorrectly labeled low-level radioactive waste
3 from the Y-12 facility in Oakridge to the Nevada National
4 Security Site. This waste was, in fact, mixed, low-level
5 radioactive waste, which violated the waste acceptance
6 criteria for NNSS.

7 Currently, NNSS lacks waste verification equipment to
8 verify that waste received for disposal meets the acceptance
9 criteria. This technology and additional personnel are
10 critical if we are able to do our job. Over 1 million cubic
11 feet of low-level radioactive mixed waste may come to us for
12 disposal each year.

13 Secretary Granholm, would you support funding for waste
14 verification technology at the NNSS to ensure that the site
15 is receiving and disposing the proper waste and avoiding
16 further mislabeled shipments?

17 Secretary Granholm: Yes. I am assuming that Dr.
18 Verdon would agree that that is important.

19 Senator Rosen: Thank you. And I yield back. I have
20 10 seconds. I am going to preside. Thank you again for
21 allowing me to --

22 Chairman Reed: Thank you, Senator Rosen. Let me now
23 recognize Senator Rounds, please.

24 Senator Rounds: Thank you, Mr. Chairman. I want to
25 say Governor Granholm, but Secretary Granholm, it is good to

1 see you again. It is. I think the governor title is
2 probably a better title, but nonetheless, welcome.

3 Secretary Granholm: Thank you.

4 Senator Rounds: Dr. Verdon, thank you for your
5 service, and we appreciate you being here in front of us
6 today. I have got a series of questions, but I want to
7 focus back on, and come back to where Senator Fischer was
8 leading to begin with, with regard to the budget. But I
9 want to lead into it by visiting with Dr. Verdon for just a
10 few minutes, concerning the infrastructure issues.

11 I would like to begin by just simply asking how
12 confident are you that the infrastructure in place to
13 support the nuclear modernization efforts and the programs
14 planned over the next few decades, whether or not the
15 infrastructure will be able to handle those necessary
16 programs, as planned. And the reason why I am asking it in
17 this way is because it is pretty clear that the
18 infrastructure that we have got right now, and I think what
19 Senator Inhofe has shared, is that we have got some pretty
20 serious infrastructure problems.

21 And, in fact, the NNSA's own fiscal year 2021 Stockpile
22 Stewardship and Management Plan states that a number of key
23 facilities do not meet modern safety standards and require
24 significantly increased investments to maintain. The plan
25 further states that the infrastructure issues may very well

1 impact stockpile maintenance and warhead deliveries.

2 This is simply not acceptable, and with that I would
3 like your opinion on whether or not we actually have it in
4 place and whether or not we are doing enough to bring it up
5 to speed.

6 Mr. Verdon: We have used the DOD requirements to
7 actually drive the priority of which we are attacking the
8 infrastructure. So all of the large facility, or facility
9 infrastructure requests have been prioritized, all with
10 meeting the DOD requirements and worker safety in mind.

11 We recognize that there is -- you know, as I think I
12 have said many times, the complex has truly atrophied. The
13 pictures showed that. We recognize we cannot do it all at
14 once, so we have prioritized it based on personnel safety
15 and the weapons that we need to deliver to the DOD. And we
16 are keeping those priorities and moving to address them all,
17 and working diligently on those facilities that we will not
18 be able to wholesale replace, to make sure that their
19 maintenance is kept up to speed.

20 Senator Rounds: Here is the second part of this,
21 though. Naturally, we are also concerned about the recent
22 announcement concerning NNSA's ability to produce plutonium
23 pits. Both statute, specifically 50 U.S.C. 2538a and
24 STRATCOM, require that NNSA produce no less than 30
25 plutonium pits per year by 2026, and 80 plutonium pits per

1 year by 2030. Can you explain why you are unable to meet
2 this statutory requirement, and also, what do we need to do,
3 as Congress, to be able to help you meet that goal, that
4 directive, that mandate?

5 Mr. Verdon: So again, the two-site solution is the
6 approach that we still think is a viable one for the 80 pits
7 per year. What we identified -- we still have confidence of
8 being to meet the 30 pits per year by 2026 at Los Alamos.
9 What the detailed analysis showed is when we started the
10 work on the Savannah River site, what the detailed analysis
11 showed is as we actually started to do the design work that
12 the amount of equipment we needed in there, the amount of
13 people we needed in there, we just could not get them in,
14 all done at the same time, to meet the 2030 objective.

15 What we do believe is if we can meet it between 2032
16 and 2035, that is what the next phase of the Savannah River
17 project will look at, is defining better what that time
18 frame is. But it was just basically more detailed
19 information, more detailed analysis to identify that vendors
20 could not potentially provide the equipment we needed on the
21 right time frame, we could not get enough people in the
22 building to do the work, you know, faster.

23 Senator Rounds: Dr. Verdon, I am going to run out of
24 time, but I just want to make this point. The Nuclear
25 Weapons Council has not certified the NNSA budget, as I

1 think Senator Fischer was getting at, which was supposed to
2 be done by the end of June. They pushed the deadline to the
3 end of July. Now there is a reason why they have not done
4 that yet.

5 Now this particular council, just for the benefit of
6 folks watching this, this Nuclear Weapons Council consists
7 of the Under Secretary of Defense for Acquisition and
8 Sustainment, the Vice Chairman of the Joint Chiefs of Staff,
9 the Under Secretary of Defense for Research and Engineering,
10 the Under Secretary of Defense for Policy, the STRATCOM
11 Commander, the NNSA Administrator. Clearly there is an
12 issue, and I am suggesting -- and this is the reason,
13 Secretary Granholm, that I think you need to be able to
14 participate in this directly -- apparently the budget -- and
15 I think there is a reason why they are not certifying the
16 budget at this point and have delayed it at least 30 days --
17 I am questioning whether or not the budget adequately
18 responds to the immediate needs that are being pointed out
19 by the deficiencies in infrastructure and the inability to
20 produce plutonium pits based on what is directed by STRATCOM
21 and by statute.

22 And I know I am out of time, but just a quick, brief
23 response, if the Chairman would allow it.

24 Chairman Reed: Yes, please. A quick response.

25 Secretary Granholm: You want that to me? It is my

1 understanding that -- and, of course, you have not seen the
2 documentation yet -- but that we are all in sync, and that
3 it will be certified. But again, you have got to get your
4 documents in front of you. I also understand that there
5 will be, as you know, a nuclear posture review in August,
6 and in the first year of any administration, or at least the
7 past couple of administrations, there is the out-funding,
8 the policy associated with that nuclear posture review is
9 not reflected in the budget, and there we wanted to have
10 some conversations about that. Understandably, we all want
11 to make sure that we have the requirements met in the out
12 years as well.

13 So I think -- and again, you will have to get the
14 document from them, but I think we are in sync, and I think
15 there will be a certification.

16 Senator Rounds: Thank you. Thank you, Mr. Chairman.

17 Chairman Reed: Thank you, Senator Rounds. Senator
18 King, please.

19 Senator King: Thank you, Mr. Chairman. Secretary
20 Granholm, the bedrock of this nation's national defense
21 strategy is deterrence, and we are going through a once-in-
22 a-generation, perhaps once in two or three generations
23 modernization of our deterrent capability -- Columbia
24 submarine, B-21, ground-based strategic deterrent, returning
25 to pit production, upgrading of warheads, and nuclear

1 command and control.

2 In your view, if we failed to do that, if we back off
3 of that mission of upgrading those elements of our nuclear
4 deterrent, does that diminish the deterrence that affects
5 the calculus of our adversaries?

6 Secretary Granholm: Yes.

7 Senator King: That is exactly the answer that I
8 believe is also the case. Deterrence is in the mind of the
9 adversary, and if they perceive that we have allowed our
10 nuclear deterrent capability to degrade, that in itself,
11 will it not diminish the effectiveness of deterrence?

12 Secretary Granholm: Absolutely. As Secretary Austin
13 has said, nuclear deterrence should be the number one
14 priority.

15 Senator King: The best conflict is the one that does
16 not occur.

17 Secretary Granholm: Exactly.

18 Senator King: The best way to have that occasion is
19 for our adversaries to understand that we are serious, and
20 that part of that is committing the resources necessary to
21 establish the capability of the deterrence.

22 Turning a moment -- and this is not strictly NNSA
23 related but it is certainly in this area -- is the role of
24 cyber and the danger of cyber in our nuclear enterprise, as
25 well as across the government. CESER is one of the

1 subagencies of the Department of Energy. I would like your
2 commitment that this is an agency that will be emphasized,
3 supported, and there is some discussion about whether it
4 should be an assistant secretary or a professional. But the
5 important thing is that this, I believe, is one of the most
6 important initiatives within the Department of Energy, and
7 will you commit to your full and enthusiastic support of
8 their mission?

9 Secretary Granholm: Not only will I commit to the full
10 and enthusiastic support, I agree with you 100 percent that
11 it must be elevated, and elevated, in my mind, means that we
12 have to make sure that we have professional staff. I want
13 to make it a directorate that will have the ability to
14 ensure that professionals are running it. It is an
15 emergency response organization, and you need professionals
16 who are running it regardless of administration.

17 Unfortunately, and you and I have discussed this, and I
18 know this is question and I am happy to have further
19 conversations, if there is an appointee, often there are
20 long gaps in the leadership, and because these issues,
21 cyberattacks, are relentless, gaps in leadership make it
22 very difficult to run an effective organization. Since
23 CESER was created, the leader of CESER has been unseated, no
24 leader for exactly half of the time.

25 So we want to make sure that there is consistent,

1 strong, professional leadership, and I want to elevate it to
2 be a directorate, and make sure that it has the resources
3 that it needs.

4 Senator King: We will continue to discuss that issue,
5 but the important thing is the emphasis on the significant
6 role.

7 Let me ask another couple of cyber questions. One is,
8 part of nuclear modernization has to be what they call C3 --
9 communications, command, and control. That has got to be
10 cyber protected, to the nth degree. Do you agree that that
11 is part of the nuclear modernization challenge?

12 Secretary Granholm: Yes.

13 Senator King: I am sorry?

14 Secretary Granholm: Yes.

15 Senator King: Thank you. The other piece is the cyber
16 protection within your agency. I hope you will be brutal in
17 testing, pen testing, and really working the cyber
18 protection within the agency. The Federal Government is
19 notorious for being cyber vulnerable, and one of the only
20 ways to protect against that is individual desktop cyber
21 hygiene. So I hope that you will test your employees to be
22 sure that they are not responding to phishing emails, that
23 they are not clicking on attachments that they shouldn't.
24 It seems mundane, but 85 or 90 percent of cyberattacks could
25 be prevented by just straightforward, simple cyber hygiene

1 at the desktop. I want you to appoint somebody whose job it
2 is to expose vulnerabilities within the Department.

3 Secretary Granholm: Yes. We have actually appointed a
4 new CIO, and this is exactly what we are focused on.

5 Senator King: The final question. Deterrence does not
6 work with nonstate actors. That is where nonproliferation
7 comes in, and we have to be concerned into the future about
8 nonstate actors getting a hold of nuclear materials. And so
9 it is critical that your Department works closely with the
10 intelligence community, with the entire nonproliferation
11 governmental structure, because, as I say, our whole
12 strategy rests upon deterrence, but deterrence does not work
13 for a half-dozen people who are perfectly willing to die to
14 bring a nuclear weapon into New York Harbor.

15 So please commit to me that you are going to remain
16 committed and keep your eye on nonproliferation, because
17 that has got to be part of our strategy.

18 Secretary Granholm: Absolutely.

19 Senator King: Thank you. Thank you, Mr. Chairman.

20 Chairman Reed: Thank you, Senator King. Senator
21 Tuberville, please.

22 Senator Tuberville: Thank you. Thank you very much,
23 Mr. Chairman. Thanks for being here today.

24 Secretary Granholm, in January the DOD issued an order
25 prohibiting utilities at military facilities from acquiring,

1 importing, transferring, or installing specified bulk power
2 system equipment from China. What was the rationale behind
3 that order?

4 Secretary Granholm: The rationale behind the order
5 initially, that the Trump administration provided, was, of
6 course, to make sure that our system is protected from
7 equipment that might be containing cyber malware from our
8 adversaries. A very solid rationale. When it was issued,
9 we received a lot of feedback from the utilities saying it
10 was overly broad and it needed to be addressed more with a
11 scalpel rather than an axe.

12 We will be following up on this. We have issued a
13 Request for Information from the utilities and others, to
14 make sure that it is crafted in a way that achieves the
15 goal. But the goal is the right goal.

16 Senator Tuberville: Does this cover critical civilian
17 facilities too?

18 Secretary Granholm: Yes.

19 Senator Tuberville: Thank you. In 2015, it was
20 reported that the DOE planned to sign a 10-year agreement to
21 build a molten salt reactor with China. What is the status
22 of that agreement?

23 Secretary Granholm: I am going to get back to you on
24 that.

25 Senator Tuberville: Okay. Thank you. You know, they

1 give all these explanations over the years, that China is no
2 longer a developing nation. I think they have proven that
3 they are a little bit past that. They are rapidly growing
4 their military and nuclear capabilities. So I would love to
5 hear from you on that. Thank you.

6 You know, a recent Hill article says the DOE is
7 destroying an important piece of our Cold War nuclear
8 programs, Uranium 233. Have you read the 2008 IG report
9 that cites that U233 is vital to our national interest?
10 Have you read that?

11 Secretary Granholm: I have not read the report.

12 Senator Tuberville: Okay. Thank you.

13 Chairman Reed, I would like permission to submit this
14 report to the record, please.

15 Chairman Reed: Without objection.

16 [The information referred to follows:]

17 [COMMITTEE INSERT]

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1 Senator Tuberville: Thank you. Just one other
2 question. U233 costs the U.S. billions to create and store,
3 billions, and as we speak we are destroying U233. We are
4 going to eventually need it, and we are spending more money
5 than is imaginable. There is not a lot of it. It is
6 stored. In your answer, why would we destroy something that
7 eventually is going to be that valuable to this country?

8 Secretary Granholm: I would ask whether Dr. Verdon has
9 a response to this, but I would say --

10 Senator Tuberville: Doctor, do you want to weigh in on
11 this?

12 Mr. Verdon: Actually, no. I would have to look into
13 that as well.

14 Senator Tuberville: Okay. Well, thank you.

15 Secretary Granholm: But I will say this, if I might.
16 It is important that the United States provide the means for
17 its own use, and there has been talk of a uranium stockpile,
18 which this Congress funded last year, which has carried
19 over. And we are, this month, sending out a Request for
20 Information about the creation of a U.S.-based uranium
21 stockpile.

22 Senator Tuberville: You know, I just hope we are not
23 allowing -- and helping China in any way. We should not be
24 doing that, especially when it comes to nuclear. I have got
25 another article, too, from The Hill on U233, Mr. Chairman, I

1 would like to submit too.

2 Chairman Reed: Without objection.

3 [The information follows:]

4 [COMMITTEE]

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1 Senator Tuberville: Okay. Thank you very much. Thank
2 you both. Thank you, Mr. Chairman.

3 Chairman Reed: Thank you very much, Senator
4 Tuberville. Now let me now recognize, via Webex, Senator
5 Warren.

6 Senator Warren: Thank you, Mr. Chairman, and thank you
7 to our witnesses for being here today.

8 I would like to talk about the NNSA's out-of-control
9 spending on the nuclear weapons systems. NNSA has a habit
10 of overpromising on development timelines and
11 underestimating on costs. And this has resulted in projects
12 costing taxpayers billions of dollars more than originally
13 anticipated, and finishing up the job years behind schedule.

14 Just recently, NNSA's budget request estimated that the
15 high end of the cost range for pit production at Savannah
16 River could be as much \$11.1 billion. That is 2.5 times the
17 original projection of \$4.6 billion. And on top of that,
18 NNSA has now pushed back its goal of producing 80 plutonium
19 pits per year from 2030 to 2035. And this is just the
20 latest NNSA project that has gone over budget and behind
21 schedule.

22 So Administrator Verdon, let me ask you, do you think
23 these ballooning costs and delays are acceptable?

24 Mr. Verdon: Again, to me it is basically, what we are
25 trying to do is actually more in line with what you are

1 asking for. We are actually trying to be more rigorous in
2 our costing and schedule estimates, and that is what we have
3 brought forward. You may not have been on earlier on. The
4 original estimate for Savannah River was a top-down
5 estimate. It was the first that anybody even thought of.
6 So it was not ever viewed as a really detailed budget
7 estimate. The one we just announced is the first detailed
8 budget and schedule estimate for that facility, and that --

9 Senator Warren: You know. Okay, let me stop you
10 there. The problem I am talking about, I use the example of
11 Savannah River because it is 2.5 times past what was
12 originally budgeted, and it is now 5 years longer to get it
13 done. But it is not the only one.

14 NNSA is anticipating a \$505 billion in nuclear weapons
15 spending over the next 25 years, over \$100 billion more than
16 what it planned to spend previously. So the question I have
17 is this is not just one off. How can Congress or taxpayers
18 feel confident that NNSA's cost estimates are anywhere close
19 to accurate?

20 Mr. Verdon: So again, we are trying to learn lessons
21 from the past as quickly as we can. In fact, of all of the
22 major construction projects we have done in the recent
23 years, 75 percent of them have actually come in at or under
24 costs that was projected for them. So I do think as an
25 organization we are learning. But what we are also

1 identifying, and as we are getting new requirements, new
2 requirements also drive up the costs, you know, the apparent
3 costs, because we are getting additional new requirements
4 into the program. So we have to look at that in total. But
5 we are trying to learn hard from the past and improve as we
6 go forward, and I think we are making progress in that area.

7 Senator Warren: Well, I would sure like to see the
8 progress, because, you know, if this had only happened once
9 or twice, that programs ran into issues, I would feel
10 differently about this. These issues are chronic. They
11 have a long and well-documented history. A 2010 GAO report
12 concluded, and I am going to quote it, that "DOE did not
13 have a cost-estimating policy and that cost-estimating
14 guidance it had developed in the 1990s remained in effect
15 but was out of date." That is over 11 years ago.

16 And I just want to hear you talk about how things have
17 really changed. And maybe the best way to do that is just
18 tell me some of the steps that NNSA can take right now, or
19 is taking right now to improve its cost estimates and to
20 ensure that these projects stay on schedule.

21 Mr. Verdon: Again, I think the Department and NNSA
22 together have put in a very rigorous capital acquisition
23 project, you know, management scheme, that we are following
24 very rigorously. We are using OMB and GAO best practices
25 and guidance. If you take something like uranium processing

1 facility, which is almost a decade-long project, \$6.5
2 billion, it is on budget.

3 So as I say, we are seeing successes. We are not
4 perfect yet. We recognize that. But we are striving to
5 work to improve as we go forward. And I say, I am learning
6 from the past, and we are moving forward to improve, and I
7 see metrics that show that we are improving. And I think
8 with working with the Department we have come up with a very
9 rigorous process to manage these large capital acquisition
10 projects, in an effort to improve.

11 Senator Warren: I hope that is the case. You know,
12 these wildly inaccurate cost estimates are unacceptable, and
13 we cannot just accept them as the norm, especially as we are
14 trying to plot out trillions of dollars in unnecessarily
15 modernizing our nuclear arsenals. These cost overruns erode
16 public faith in government spending and jeopardize other
17 important NNSA projects like nonproliferation and
18 counterterrorism efforts.

19 Look, I do not think it is outrageous to expect that
20 taxpayer dollars we invest be spent intelligently and
21 responsibly, and I think it is long past time for NNSA to
22 get its house in order on this. I hear you when you say
23 that those procedures are underway, but I want to see the
24 results on this. These are taxpayer dollars and taxpayer
25 time that is at risk here.

1 Thank you, Mr. Chairman.

2 Chairman Reed: Thank you, Senator Warren. Let me now
3 recognize Senator Ernst, please.

4 Senator Ernst: Thank you, Mr. Chair, and thank you,
5 Secretary Granholm and Dr. Verdon, for being here today.

6 Of course, effective transition to the ground-based
7 strategic deterrent will require a plan to safely and
8 efficiently dismantle, dispose, and demilitarize the current
9 ICBM fleet. And if you could -- and I apologize for missing
10 the first part of this -- but if you could please walk us
11 through what progress is actually being made and what
12 challenges you are facing with the disposition planning for
13 the Minuteman III.

14 Mr. Verdon: So we are not responsible for the missile
15 -- that would be the Air Force -- but for the warheads that
16 are on the missile, roughly half of them will transition off
17 of the Minuteman III onto the GBSD. The ones that will not
18 transition, the material associated with those warheads,
19 when authorized, will be disassembled and stored safely and
20 securely, as we have done in the past, with the material
21 that composes those warheads.

22 Senator Ernst: So you do not foresee any issues then
23 with that disposition.

24 Mr. Verdon: No.

25 Senator Ernst: That is good. And then also, of

1 course, DOD, DOE, and NNSA, they all have a stake in the
2 development of the nuclear cores that are supporting our
3 weapons systems and our nuclear Navy. What is the
4 assessment of the capability and ability of our domestic
5 supply and production chains to produce these nuclear cores?

6 Mr. Verdon: By cores -- I am sorry, for clarification
7 -- by cores you are referring to the pits, that we call the
8 pits? Is that what you mean by the core, or the whole
9 weapon?

10 Senator Ernst: The whole weapon.

11 Mr. Verdon: So we are working very diligently to make
12 sure we have a supply chain. I think we are working very
13 closely with the Department and the Department of Defense in
14 reestablishing more domestic supplies of some of the
15 materials that we need, so we are recognizing that that is a
16 key area that we have to work on.

17 But we are reestablishing, or we have established and
18 we continue to work to make sure that we have the correct
19 infrastructure to support what we need to do.

20 Senator Ernst: And Dr. Verdon, is there a role that
21 you would see at the Federal Government level or with
22 Congress in making sure that we can procure what is
23 necessary domestically?

24 Mr. Verdon: You know, we do not have a definitive
25 answer yet, but I believe there will be some materials for

1 which the economic -- you know, trying to get industry to
2 restart some of the, you know, domestically, will be a
3 challenge that we may need help in the future. There are
4 certain materials we use that we have to rely on external
5 sources for, that bringing them back onshore may present a
6 challenge for the future that we certainly would potentially
7 need help in doing so.

8 Senator Ernst: And what would some of those concerns
9 that we have with external sources, where would those
10 sources be located?

11 Mr. Verdon: I will say sensitive countries.

12 Senator Ernst: Okay. Thank you. I appreciate your
13 time. Thank you, Mr. Chairman.

14 Chairman Reed: Thank you very much, Senator Ernst.
15 Let me now recognize Senator Kelly, please.

16 Senator Kelly: Thank you, Mr. Chairman, and Secretary
17 Granholm, great to see you again, and Dr. Verdon, great to
18 have a University of Arizona Wildcat testifying.

19 Secretary Granholm, cyberattacks, malware, ransomware
20 attacks have been increasing. Yesterday we had a closed
21 Cybersecurity Subcommittee hearing on some of the details of
22 these recent attacks. It is an issue that impacts us all,
23 from small businesses, large business, government agencies,
24 secure networks in our national security agencies. It is a
25 big concern of mine.

1 The recent Colonial Pipeline cyberattack underscored
2 the vulnerability of America's physical infrastructure and
3 the impact that even a single attack can have on the nation.
4 So I am pleased to see the increased focus on cybersecurity
5 in the fiscal year 2022 budget request, a 42 percent
6 increase from last year's funding.

7 Secretary Granholm, if Congress funds this increase,
8 what efforts will the Department of Energy undertake to
9 ensure that America's energy networks are secured against
10 malware, ransomware, and other types of cyberattacks?

11 Secretary Granholm: Thank you for asking the question.
12 As we have seen, the Colonial Pipeline incident made it
13 clear that the fact that we do not have standards on
14 pipelines, cyber standards on pipelines, like we do on the
15 electricity sector, suggests a major whole. And so working
16 internally -- now the Department of Energy and CESER is the
17 sector risk manager for the energy sector -- working in
18 partnership with CISA, who is over in the Department of
19 Homeland Security, and the TSA that has responsibility over
20 pipelines, we want to make sure that our efforts, and this
21 increase in funding, ensures a collaborative, cohesive whole
22 response inside of government, on the energy side, which is
23 obviously where our focus is.

24 We want to make sure that the Executive order that the
25 President issued regarding cyber, and including the notion

1 of Energy Star ratings for software, so that we all, inside
2 the Federal Government, are purchasing supplies, software,
3 that we know are the best, that have the highest standards,
4 that make us secure. Those efforts inside of DOE are going
5 to require additional resources, hence some of that
6 increase, so both on personnel, as well as coordination, as
7 well as helping develop standards, as well as implementing
8 those standards inside of the Department are all what CESER
9 is working on.

10 Senator Kelly: And then also part of this, you know,
11 is the sharing of information, and the President had
12 Executive Order 14028, that talked about this, and really
13 discussed removing barriers to cyber threat, information-
14 sharing with the private sector. So information that would
15 go from government agencies to private sector to benefit all
16 Americans. And this could enhance our national security,
17 but being able to gather real-time information about active
18 threats and effectively communicate to others at risk in
19 private industry, we see that this can help deter and
20 prevent cyberattacks on our country's energy network.

21 So can you address any barriers that currently exist to
22 communication between the Department of Energy and private
23 sector regarding cyberattacks?

24 Secretary Granholm: Yeah. I mean, CESER's
25 communications with the electricity sector are excellent.

1 We are embedded in the Council, we work with them closely.
2 It is a great example of what the steps are that have to
3 happen. In that Executive order, the President, for
4 example, required that pipelines notify the government if
5 they have been the victim of cyberattack or ransomware
6 attack. That was not required before.

7 So what CESER wants to do is to elevate the visibility,
8 the transparency between what is happening in the private
9 sector and the information flow to the government. So one
10 example of that is technology that has been developed at one
11 of our national labs, PNNL. It is called CRISP. It was one
12 example of technology that was attached to the electricity
13 sector that would give us visibility into the systems, so
14 that if there were a bad actor we would know about it, our
15 intelligence community would know about it, and we would be
16 able to engage in defensive strategies. We do not have that
17 on the pipeline sector. And so that is the kind of
18 visibility that is needed on the full panoply of the
19 infrastructure associated with energy.

20 Senator Kelly: And beyond even infrastructure, I just
21 want to point out that it would benefit all of us if we
22 could do a much better job sharing this information from the
23 private sector to the public sector, so our law enforcement
24 agencies, Department of Justice, FBI knows what is going on
25 in the private sector. We were discussing this yesterday.

1 How can we improve that flow of information? Often, you
2 know, companies -- and I understand their rationale for this
3 -- don't always want this information to get out there, so
4 we need to explore options to maybe keep this somewhat
5 private at some level. What we are discussing today is the
6 information that goes from government to private industry.
7 So we have got to do a better job. This is just going to
8 continue, and in my view, accelerate and get worse.

9 Thank you, and Mr. Chairman, I want to submit just a
10 couple of questions for the record to Dr. Verdon. Thank
11 you.

12 Chairman Reed: Quite all right. Without objection.
13 Let me now recognize, via Webex, Senator Blackburn.

14 Senator Blackburn: Thank you, Mr. Chairman, and thank
15 you to our witnesses. I want to talk a little bit about our
16 NNSA facilities. We have mentioned this in several of our
17 hearings. Most of these are over 40 years old. Some are
18 more than 75 years old that go back to the Manhattan
19 Project. And these facilities present numerous single
20 points of failure.

21 So to understand the gravity of the situation, I would
22 like for each witness to provide a specific example of a
23 potential consequence to the stability of the U.S. nuclear
24 enterprise, if it must continue to rely on this aging
25 infrastructure, and talk a little bit about how this is a

1 budgetary issue, how this is a personnel issue, and how this
2 a national security issue, because if any facilities
3 experience operational shutdowns, warhead deliveries may be
4 affected.

5 So let's start with that and look at this deferred
6 maintenance around these facilities, and talk about how you
7 are going to deal with this in this budget. Secretary
8 Granholm, we will start with you.

9 Secretary Granholm: Yes, thank you for the question,
10 Senator, and I know Dr. Verdon can speak with great
11 specificity, but I think your point about if we do not
12 modernize, if we do not have the deterrent capability, then
13 we put our nation at risk. Bottom line. So we have to be
14 able to modernize the warheads, and in order to do that we
15 have to have facilities that will allow for that
16 modernization to occur. So it is a national security issue,
17 obviously.

18 It is also, I would say, an opportunity for the U.S. to
19 continue to build up its manufacturing backbone inside of
20 the United States. And so the issue that Senator Ernst
21 began to raise, and I think Senator Tuberville, you were
22 suggesting as well, is to bring and make sure that we have
23 the capabilities for our own defense here in the United
24 States without having to rely upon others.

25 So from an economic point of view, from a national

1 security point of view, we have to do this. It will require
2 budgetary commitment -- I know that was a third part of your
3 question -- and we want to make sure that we do this in a
4 thoughtful and responsible way, to make sure that we meet
5 the defense requirements, and do so in a way that manages,
6 and are stewards of the taxpayer dollars as well.

7 Mr. Verdon: I would just add that I agree with your
8 statements. I think, you know, uranium processing facility
9 at the Y-12 is one of the key examples of that, that we are
10 trying to get, eventually be able to get programmatic work
11 out of a 70-year-old building that was built during the
12 Manhattan Project, that we are critically dependent on now.
13 And that is the approach we have taken to our whole approach
14 of replacing a lot of these old facilities is identifying
15 what those are key, that if we were to lose them would
16 really cause the strategic commander a great deal of
17 difficulty operationally, and those are our priorities to
18 focus. The uranium processing facility is one. The lithium
19 processing facility proposed in starting to be designed at
20 Y-12. There are a number of them that we have worked very
21 hard to identify which one of those would really be
22 instrumental to get done as quickly as possible, and that
23 has been the focus of the program. And those that we can
24 risk mitigate out longer -- we have delayed them, just, you
25 know, to make sure that we can, workload level as well as

1 cash flow level.

2 But your point is well taken. I agree with the
3 Secretary that we are reaching -- we have reached a tipping
4 point. We have to do this. Otherwise there will be
5 consequences to the operations.

6 Senator Blackburn: Dr. Verdon, when you talk about
7 scheduling modernization for the key secondaries group, and
8 the capabilities that are there with enriched uranium,
9 depleted uranium, lithium, how does this lack of attention
10 to meeting the deferred maintenance backlog, what does that
11 do and what kind of challenge does that present to the
12 secondaries, not only in an economic manner but also with a
13 personnel manner?

14 Mr. Verdon: Again, what we tried very hard to do is we
15 have prioritized the deferred maintenance we do. It is
16 clearly applied to those facilities that are most important
17 for workforce safety and programmatic deliverables. That is
18 where we applied the money first.

19 And then for a number of facilities, like at Y-12,
20 which you mentioned for the secondaries, they have reached
21 the point to where, again, we are working on replacing most
22 of them because we recognize that, you know, affectionately
23 we say something the paint is holding the building together.

24 Senator Blackburn: Yeah.

25 Mr. Verdon: And so those are the ones that we

1 prioritized to be replaced, effectively as a different
2 approach to deferred maintenance, but we think it is the
3 best approach, and for those other areas we have prioritized
4 the work to the highest-priority buildings that we have on
5 the sites.

6 So again, that is the approach we have taken, driven by
7 DOD deliverables and workforce and environmental safety.

8 Senator Blackburn: Thank you.

9 Chairman Reed: Senator Blackburn, I assume you have
10 concluded your comments?

11 Senator Blackburn: Okay.

12 Chairman Reed: With respect to that I will now
13 recognize, via Webex, Senator Gillibrand.

14 Senator Gillibrand: Thank you, Mr. Chairman.
15 Secretary Granholm and Administrator Verdon, I was really
16 pleased to see in your written testimony you mentioned
17 enhancing our cybersecurity across the nuclear enterprise,
18 especially in the wake of the Colonial Pipeline hack, and
19 the targeting of another contractor that works for the
20 government's nuclear programs.

21 I listened with great interest to your responses to
22 Senator Kelly. But acknowledging that we are in an
23 unclassified setting, do you feel confident about DOE and
24 NNSA's capacity to handle the ever-growing cybersecurity
25 threat from malicious actors and adversaries, and where are

1 the areas where Congress can be helpful? I did hear you say
2 you needed funding. I did not know if you need authorities.
3 How is your ability to recruit and retain key personnel?

4 Secretary Granholm: Thank you for the question,
5 Senator. I think there is, right now, an administration
6 effort on cyber, where we are reviewing all of this. But I
7 will say that it is clear that there are gaps, not so much
8 in our ability internally to respond, but in our ability to
9 seek what is happening in the private sector.

10 And so this will be a question, and I am sure Congress
11 will have to look at this, is there a way that the private
12 sector can, for example, on the pipeline side, step up to
13 allow themselves to allow the government to have some
14 visibility into the system, since the public relies upon
15 their system? Is there a requirement that would have
16 Congress step in to say something, or is this something that
17 could be incentivized on a voluntary basis? I think those
18 are all worthy questions of exploring. But what is not
19 acceptable, I think is the status quo. So penetrating the
20 information flow from the private sector and encouraging
21 that to us and to the intelligence community is a high
22 priority.

23 Senator Gillibrand: I agree that the status quo is
24 unacceptable, and we are working on legislation within the
25 Intelligence Committee to address visibility into the

1 private sector, and least have mandatory reporting when
2 private sector has some intrusion. So we are working on
3 authorities, and this committee will also be working on that
4 to meet the needs, and I welcome your advice and guidance on
5 that.

6 Do you have the personnel that you need? We have
7 talked a lot about getting the best and brightest cyber
8 personnel for the entire services and intelligence services.
9 And we have debated issues of whether we need, for example,
10 a cyber academy, similar to the service academies, where we
11 can create civilian workforce through something like a
12 service academy, and for 4 years of your education you give
13 back 4 years in the public sector, such as working at
14 Department of Energy or working at NSA or CIA, or any other
15 civilian branches that need the best and brightest in cyber.
16 Is that something that you think would be useful for your
17 ability to attract and retain some of the best talent, as
18 opposed to having them go to the private sector immediately?

19 Secretary Granholm: Yeah, I think we would welcome a
20 pool of talented people. We are always trying to increase
21 our science, technology, engineering, and math pipeline, and
22 if there were a dedicated place where we could be able to
23 ensure that we would have some of that talent, and perhaps
24 even once they are in, recruit them for the long haul, that
25 would be a terrific gift to the nation.

1 Senator Gillibrand: Thank you. And one further
2 question. I see that there is some potential for artificial
3 intelligence to help bolster the security of our nuclear
4 weapons systems, but I also have significant concerns given
5 our vulnerability. Again, acknowledging that this is an
6 unclassified setting, what elements of our nuclear command,
7 control, and communication, would you feel more comfortable
8 potentially having AI play a role, and what elements do you
9 believe should firmly remain within the control of human
10 beings?

11 Secretary Granholm: I am going to let Dr. Verdon
12 respond to that.

13 Mr. Verdon: Well, I think the bigger control, I think,
14 would be the bigger NC3. That is really a DOD requirement,
15 and they would be the ones that would have to answer that
16 question in detail.

17 With regards to ours and that kind of role, our
18 requirements, we are taking a hard look at that, and it is a
19 good question. We are taking a hard look at that, of how do
20 we make sure that parts which have to stay in human control
21 do so, and that which we can turn over to things like AI, we
22 do, you know, do carefully. But I think the bigger question
23 of the whole command and control that is really a DOD
24 question for you to address.

25 Senator Gillibrand: Thank you. Thank you so much,

1 both of you, for your service, and thank you, Mr. Chairman.

2 Chairman Reed: Thank you very much, Senator

3 Gillibrand. Senator Hawley, please.

4 Senator Hawley: Thank you, Mr. Chairman, and thanks to
5 the witnesses for being here. Dr. Verdon, if I could just
6 start with you, I want to talk about the Kansas City
7 National Security Campus, something we are very proud of, my
8 home state of Missouri. Can you give us an update on the
9 NNSA's efforts to ensure that the Kansas City campus has the
10 capacity, the additional capacity it needs to meet
11 production requirements in the coming years?

12 Mr. Verdon: Yes, sir. So we are expanding the
13 capacity, or the footprint, if you like, for manufacturing
14 and developing. We are doing that right now through
15 leasing, but in parallel we are starting to work on what a
16 long-term vision would be, what would be the long-term
17 commitment. So we are doing both. We are trying to address
18 the near-term needs, and that will give us information about
19 what size the long term may need to be, and then we are
20 looking at options for a consolidated campus as we go
21 forward into the future.

22 Senator Hawley: Very good. Secretary Granholm, let me
23 ask you to weigh in here. I did want to ask specifically
24 about the space that the campus needs, as well as more
25 general support. So can you comment on that as well, making

1 sure that the campus has the space that it is going to need?

2 Secretary Granholm: Yeah. As Dr. Verdon said, they
3 are looking at these short-term leases for the moment, but
4 expanding to create one consolidated place makes sense, and
5 supportive, obviously, of what the NNSA's needs are.

6 Senator Hawley: Very good. Dr. Verdon, the STRATCOM
7 Commander testified earlier this year, this is the quote,
8 "The plutonium pit production is the biggest stockpile
9 modernization issue." Can you confirm that the NSA is still
10 on track to restore our ability to produce 80 plutonium pits
11 per year by 2030?

12 Mr. Verdon: So we are, as we recently notified, we
13 believe, based on all of the input we have now, and having
14 the ability to work with the vendors and the construction,
15 that we will not be able to achieve the 50 pits a year by
16 2030. We believe that the time frame for that will be
17 somewhere in the range of 2032 to 2035. That is the next
18 step find out as to what that range would be.

19 We started to have the detailed discussions with
20 actually laying out the construction that was required,
21 laying out the work with the vendors that supply the
22 equipment, and we found that it did not look like it was
23 possible to do it by 2030. So right now we have identified
24 2032 to 2035, and the next step is to fine-tune those dates.

25 Senator Hawley: So we are looking at, I think you said

1 50, 50 pits per year by 2032 to 2035?

2 Mr. Verdon: So, sorry. But we are still very
3 optimistic that we will achieve the 30 pits a year at Los
4 Alamos by 2026. So that still is on target.

5 Senator Hawley: But 50 pits a year, now you are
6 hoping, in the 2032 to 2035 time range, is what you are
7 saying.

8 Let me ask you, in that context, about China. Madam
9 Secretary, Admiral Richard has testified recently that China
10 is well ahead of the pace to double their stockpile by the
11 end of this decade. I can only say I think that those
12 efforts are deeply, deeply concerning, and speaks to the
13 need to modernize our own nuclear deterrent.

14 Do you agree that plutonium pit production is
15 absolutely foundational to our nuclear deterrent, and will
16 you prioritize ensuring that we are able to stay on
17 schedule? It sounds like the schedule is already slipping.
18 Will you prioritize getting back on schedule to ensure our
19 efforts to restore this key capability?

20 Secretary Granholm: I do and I will.

21 Senator Hawley: Very good. Dr. Verdon, the NNSA's
22 budget request this year includes several increases in the
23 Production Modernization Account, I noticed. Some of those
24 increases relate to plutonium pit certification activities.
25 Can you say something more about that, what those

1 certification activities entail, and why you requested the
2 increase?

3 Mr. Verdon: Yes. So to build a pit is not just
4 putting the equipment in. It is actually then having the
5 laboratory that designs that pit, saying that what was built
6 meets requirements. And so what is what we call
7 certification. So it is those activities which involve, you
8 know, small-scale testing, large-scale testing, to make sure
9 that what the equipment and the people have built meets
10 requirements and could be put into the stockpile. And that
11 is the certification effort.

12 Senator Hawley: Got it. Very good. Thank you, Mr.
13 Chairman.

14 Chairman Reed: Thank you, Senator Hawley. I
15 understand that Senator Inhofe has no additional questions.
16 I want to thank the witnesses, Secretary Granholm and Dr.
17 Verdon, for your thoughtful and important testimony today.
18 And with that I would call the hearing adjourned. Thank
19 you.

20 [Whereupon, at 10:27 a.m., the hearing was adjourned.]

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