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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.

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

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

Committee Members Present: Senators Reed [presiding], Gillibrand, Kaine, King, Warren, Manchin, Rosen, Kelly, Inhofe, Wicker, Fischer, Rounds, Ernst, Tillis, Scott, Blackburn, Hawley, and Tuberville.
OPENING STATEMENT OF HON. JACK REED, U.S. SENATOR FROM RHODE ISLAND

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

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

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

Within this $27.9 billion defense proposal, the National Nuclear Security Administration, or NNSA, is
requesting $19.74 billion, or a 0.5 percent increase over last year's level of $19.73 billion. While the fiscal year 2022 budget is flat, I would note that the amount for environmental cleanup increased by 6.4 percent to a total of $6.8 billion.

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

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

The NNSA has also experienced its highest workload
since the 1980s, as it manages five major warhead programs while rebuilding nuclear infrastructure that is original to the Manhattan Project of 70 years ago, and I am interested in how NNSA is managing this workload and the status of modernization of the facilities.

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

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

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

    Now let me recognize the ranking member, Senator Inhofe, please.
STATEMENT OF HON. JAMES INHOFE, U.S. SENATOR FROM OKLAHOMA

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

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

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

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

We have that same problem with this year's NNSA budget. For the first time since 2013 -- this is significant -- for the first time since 2013, the NNSA request has shrunk from the previous year, mostly because of a $500 million cut to NNSA deferred maintenance efforts. Deferred maintenance is
kind of a less-than-courageous way of doing something without being caught. I think we all understand that.

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

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

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

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

Chairman Reed: Thank you very much, Senator Inhofe.

Madam Secretary, you are recognized, please.
STATEMENT OF HONORABLE JENNIFER GRANHOLM, SECRETARY OF
ENERGY

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

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

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

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

Working together with NNSA and DOE, we have reached
several notable milestones over the last 5 months, and that
includes our support for diplomatic efforts to successfully
extend the New START nuclear arms control treaty with
Russia, and our progress around the Los Alamos plutonium pit
production project, which is now underway, and which will produce 30 war-reserved plutonium pits per year to meet our national security needs. We have also moved forward on a series of upgrades that are essential to the nation's nuclear deterrent, and our work is further facilitated by our exceptional partnership with the Department of Defense.

You will be glad to know, I hope, that DOE and NNSA and DOD are engaging in high-level coordination, and we are in lockstep around our mutual goal of ensuring that the U.S. nuclear deterrent is fully funded and properly managed.

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

The budget proposal before you would allow us to make substantial progress in five areas. One, it would sustain funding for NNSA in support of the agency's longstanding nuclear modernization efforts. Second, it would support our weapons account activities, and that means allowing us to keep the nation's stockpile and infrastructure in line with DOD requirements. Third, it will enhance our Office of Defense Nuclear Nonproliferation, so that we can ramp up our work to prevent state and nonstate actors from achieving
their ambitions around nuclear weapons. Fourth, it provides the resources needed to support the U.S. Navy with militarily effective nuclear propulsion plants, and ensure they are safe and reliable and long-lived operation. And fifth, importantly, it would allow our Office of Environmental Management to advance our commitments to the communities that have supported national defense programs and nuclear research and facilitating continued progress along all 16 of our cleanup sites.

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

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

[The joint prepared statement of Secretary Granholm and Mr. Verdon follows:]
Chairman Reed: Well, thank you, Madam Secretary. Dr. Verdon, do you have a statement?

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

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

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

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

Chairman Reed: Well, thank you, Madam Secretary.

Dr. Verdon, plutonium facility construction costs are about $20,000 to $25,000 per square foot, on average, based on what you have been doing out at Los Alamos. In 2018, you performed an engineering study in which Los Alamos originally proposed a modular 25 [sic]-square-foot building to be built next to their plutonium facility, at roughly $5 billion. And early the Nuclear Weapons Council approved
That was one approach, but the administration is firmly committed now to two facilities, one in Savannah and one in Los Alamos. But the facility in Savannah's cost growth has gone from $4.6 billion to $11 billion. And I wonder, looking at the metric of square feet and what you have done in Los Alamos, are you considering applying the same type of production to Savannah to lower costs, or alternatives to try to lower costs?

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

But we still find that the two-site solution is the most schedule- and cost-efficient way for us to reach the 80 pits a year, because as you mentioned, to do 80 pits at one site would require a whole new facility to be built, which would add years and quite a bit of money to build that facility. We are finding that the approach that we are using for MOX and Los Alamos are very consistent, and all of the latest information we have, which is basically the best we have had since we started this, still indicates that this
Chairman Reed: So roughly the square foot cost at Savannah will be equivalent to the cost at Los Alamos?

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

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

Mr. Verdon: Well, the necessity, I would say you would have to speak to the STRATCOM Commander for that, because he
sets those requirements. But our work with the United Kingdom, which is an independent development of their warhead, we tried to synergistically leverage each other's abilities to make sure that we have the highest confidence that both systems will work. And where they integrate is more back into, again, the Navy, so Admiral Wolfe, when it comes to integrating on the missile. So that is why it is necessary for us to work closely together to make sure that both what we build for the United States and what they build for their country will function correctly on the missiles, which are common.

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

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

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

Last summer, the previous NNSA administrator testified that more than a third of the NNSA's facilities are over 60 years old. We know that, and we have heard that, and that is a problem.
Secretary Granholm, I would first ask you, have you personally seen and witnessed and toured these facilities?

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

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

Secretary Granholm: Absolutely, Senator.

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

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

Dr. Verdon, you are an expert. In the past year's NNSA, official stated that they need real sustained growth every year to keep the nuclear modernization on track. How will flat or reduced budget affect the NNSA ability to meet the DOD requirements over time, should that be the case?
Would you expand on that a little bit, on what would be the effect if we failed to come up with the right approach to this?

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

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

So that was one of the reasons we lowered the request from some initials, was just the realization that COVID had a larger impact in that area. But again, we think we can accomplish -- you know, we are working with the sites, that
we can accomplish all of the work required to keep the infrastructure moving forward. As I say, all the major facility modernizations are supported, and so that was a lot of the thinking.

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

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

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

Mr. Verdon: Yes, I agree. I mean, your pictures are worth 1,000 words. We have a lot of infrastructure work to do, and as I say, we kept a major focus on the modernization
because that, in some sense, is deferred maintenance as well. Some of the buildings, the faster we can replace them, the better off we are, instead of putting money to try to keep old buildings functioning.

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

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

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

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

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

A concern that I had in the previous administration was a policy that is known as Part 810 authorizations, when the United States -- Part 810 describes a process by which the United States vets and then approves the transfers of sensitive nuclear technology to other nations. It had long
been the practice of administrations of both parties that
when Part 810 agreements were reached, and limited transfers
of sensitive nuclear technology to other nations was
allowed, that the administrations would notify Congress of
that fact.

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

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

I was not given an answer about that at the hearing. I
was promised information about it, and it took a very, very
long time for me to finally get the information from the
administration, and I give credit, actually Senator Jim
Risch, then chair of the Senate Foreign Relations Committee, eventually helped me get this information.

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

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

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

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

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

Senator Fischer: Thank you, Mr. Chairman. Dr. Verdon, what lessons do you think we can learn from our recent experience with pit production? I know this has been an objective since Rocky Flats closed in 1989. It was part of
President Obama's modernization commitment that he made with the New START Treaty. But CMRR was cancelled in 2012, and NSA did not begin its analysis of alternatives for follow-up options until 2016. That analysis failed to select a preferred alternative. It was followed by a subsequent engineering analysis, and finally, after 2 years of study, NNSA selected its current approach, which we are now discovering is not going to make the deadline for production.

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

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

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

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

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

Secretary Granholm: Well, I obviously defer to the
expertise of the gentleman to my left, because his knowledge
and his management of the production and the time frame and
the estimates are well grounded in his experience. And I just have to say that, you know, as the Energy Secretary, the relationship between NNSA and DoE and the sharing of information like this has been incredibly important for me, just as a starting matter, but also the pledge to continue to work closely with NNSA, in my learning of the production challenges, the estimate challenges, the managerial challenges, the personnel recruitment issues that NNSA is experiencing, which is reflected across society, frankly.

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

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

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

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

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

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

I want to quickly talk about the Nevada National Security Site and our infrastructure needs, because when I last visited there I saw the ongoing construction project at the U1a facility for enhanced capabilities for the subcritical experiments that we do there, the ECSE. I am excited that Nevada National Security Site was going to house the most capability weapons radiographic system in the world.

So Dr. Verdon, could you provide us with an update on the upgrade to the ECSE facility at the U1a complex and tell us how the new facility will improve our Stockpile Stewardship Program's scientific capabilities, including a very important understanding of plutonium?

Mr. Verdon: Yes. We are moving forward, as you say, with the ECSE, which is really two parts. One is actually the construction of the underground facility, which is
moving forward and is meeting all of their objectives, and
the development of the radiographic equipment, which is also
making progress on schedule. So the project is one of our
highest-focused areas and the labs and sites are working
very hard to make sure that that is met.

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

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

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

Senator Rosen: Thank you. I would like to move on to
you, Secretary Granholm, and talk a little bit about the
plutonium removal. In fall of 2018, the Department of
Energy secretly—secretly—shipped one half a metric ton of
weapons-grade plutonium from South Carolina to the Nevada
National Security Site. As part of an effort to restore
trust with the people of Nevada, NNSA committed to begin
that removal of the material no later than 2021, completing
the removal by 2026.

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

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

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

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

Senator Rosen: Thank you. And the last question I
have is about radioactive waste shipments, because in 2019,
Nevada learned that the Department of Energy had been shipping incorrectly labeled low-level radioactive waste from the Y-12 facility in Oakridge to the Nevada National Security Site. This waste was, in fact, mixed, low-level radioactive waste, which violated the waste acceptance criteria for NNSS.

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

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

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

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

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

Senator Rounds: Thank you, Mr. Chairman. I want to say Governor Granholm, but Secretary Granholm, it is good to
see you again. It is. I think the governor title is probably a better title, but nonetheless, welcome.

Secretary Granholm: Thank you.

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

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

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

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

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

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

    Senator Rounds:  Here is the second part of this,
though.  Naturally, we are also concerned about the recent
announcement concerning NNSA's ability to produce plutonium
pits.  Both statute, specifically 50 U.S.C. 2538a and
STRATCOM, require that NNSA produce no less than 30
plutonium pits per year by 2026, and 80 plutonium pits per
year by 2030. Can you explain why you are unable to meet this statutory requirement, and also, what do we need to do, as Congress, to be able to help you meet that goal, that directive, that mandate?

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

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

Senator Rounds: Dr. Verdon, I am going to run out of time, but I just want to make this point. The Nuclear Weapons Council has not certified the NNSA budget, as I
think Senator Fischer was getting at, which was supposed to be done by the end of June. They pushed the deadline to the end of July. Now there is a reason why they have not done that yet.

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

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

Chairman Reed: Yes, please. A quick response.

Secretary Granholm: You want that to me? It is my
understanding that -- and, of course, you have not seen the
documentation yet -- but that we are all in sync, and that
it will be certified. But again, you have got to get your
documents in front of you. I also understand that there
will be, as you know, a nuclear posture review in August,
and in the first year of any administration, or at least the
past couple of administrations, there is the out-funding,
the policy associated with that nuclear posture review is
not reflected in the budget, and there we wanted to have
some conversations about that. Understandably, we all want
to make sure that we have the requirements met in the out
years as well.

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

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

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

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

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

Secretary Granholm: Yes.

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

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

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

Secretary Granholm: Exactly.

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

Turning a moment -- and this is not strictly NNSA related but it is certainly in this area -- is the role of cyber and the danger of cyber in our nuclear enterprise, as well as across the government. CESER is one of the
subagencies of the Department of Energy. I would like your
commitment that this is an agency that will be emphasized,
supported, and there is some discussion about whether it
should be an assistant secretary or a professional. But the
important thing is that this, I believe, is one of the most
important initiatives within the Department of Energy, and
will you commit to your full and enthusiastic support of
their mission?

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

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

So we want to make sure that there is consistent,
strong, professional leadership, and I want to elevate it to be a directorate, and make sure that it has the resources that it needs.

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

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

Secretary Granholm: Yes.

Senator King: I am sorry?

Secretary Granholm: Yes.

Senator King: Thank you. The other piece is the cyber protection within your agency. I hope you will be brutal in testing, pen testing, and really working the cyber protection within the agency. The Federal Government is notorious for being cyber vulnerable, and one of the only ways to protect against that is individual desktop cyber hygiene. So I hope that you will test your employees to be sure that they are not responding to phishing emails, that they are not clicking on attachments that they shouldn't. It seems mundane, but 85 or 90 percent of cyberattacks could be prevented by just straightforward, simple cyber hygiene.
at the desktop. I want you to appoint somebody whose job it
is to expose vulnerabilities within the Department.

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

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

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

Secretary Granholm: Absolutely.

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

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

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

Secretary Granholm, in January the DOD issued an order
prohibiting utilities at military facilities from acquiring,
importing, transferring, or installing specified bulk power system equipment from China. What was the rationale behind that order?

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

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

Senator Tuberville: Does this cover critical civilian facilities too?

Secretary Granholm: Yes.

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

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

Senator Tuberville: Okay. Thank you. You know, they
give all these explanations over the years, that China is no longer a developing nation. I think they have proven that they are a little bit past that. They are rapidly growing their military and nuclear capabilities. So I would love to hear from you on that. Thank you.

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

Have you read that?

Secretary Granholm: I have not read the report.

Senator Tuberville: Okay. Thank you.

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

Chairman Reed: Without objection.

[The information referred to follows:]

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

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

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

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

Senator Tuberville: Okay. Well, thank you.

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

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

Chairman Reed: Without objection.

[The information follows:]

[COMMITTEE]
Senator Tuberville: Okay. Thank you very much. Thank you both. Thank you, Mr. Chairman.

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

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

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

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

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

Mr. Verdon: Again, to me it is basically, what we are trying to do is actually more in line with what you are
asking for. We are actually trying to be more rigorous in our costing and schedule estimates, and that is what we have brought forward. You may not have been on earlier on. The original estimate for Savannah River was a top-down estimate. It was the first that anybody even thought of. So it was not ever viewed as a really detailed budget estimate. The one we just announced is the first detailed budget and schedule estimate for that facility, and that --

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

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

Mr. Verdon: So again, we are trying to learn lessons from the past as quickly as we can. In fact, of all of the major construction projects we have done in the recent years, 75 percent of them have actually come in at or under costs that was projected for them. So I do think as an organization we are learning. But what we are also
identifying, and as we are getting new requirements, new
requirements also drive up the costs, you know, the apparent
costs, because we are getting additional new requirements
into the program. So we have to look at that in total. But
we are trying to learn hard from the past and improve as we
go forward, and I think we are making progress in that area.

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

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

Mr. Verdon: Again, I think the Department and NNSA
together have put in a very rigorous capital acquisition
project, you know, management scheme, that we are following
very rigorously. We are using OMB and GAO best practices
and guidance. If you take something like uranium processing
facility, which is almost a decade-long project, $6.5 billion, it is on budget.

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

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

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

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

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

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

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

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

Mr. Verdon: No.

Senator Ernst: That is good. And then also, of
course, DOD, DOE, and NNSA, they all have a stake in the
development of the nuclear cores that are supporting our
weapons systems and our nuclear Navy. What is the
assessment of the capability and ability of our domestic
supply and production chains to produce these nuclear cores?

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

Senator Ernst: The whole weapon.

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

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

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

Mr. Verdon: You know, we do not have a definitive
answer yet, but I believe there will be some materials for
which the economic -- you know, trying to get industry to restart some of the, you know, domestically, will be a challenge that we may need help in the future. There are certain materials we use that we have to rely on external sources for, that bringing them back onshore may present a challenge for the future that we certainly would potentially need help in doing so.

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

Mr. Verdon: I will say sensitive countries.

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

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

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

Secretary Granholm, cyberattacks, malware, ransomware attacks have been increasing. Yesterday we had a closed Cybersecurity Subcommittee hearing on some of the details of these recent attacks. It is an issue that impacts us all, from small businesses, large business, government agencies, secure networks in our national security agencies. It is a big concern of mine.
The recent Colonial Pipeline cyberattack underscored the vulnerability of America's physical infrastructure and the impact that even a single attack can have on the nation. So I am pleased to see the increased focus on cybersecurity in the fiscal year 2022 budget request, a 42 percent increase from last year's funding.

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

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

We want to make sure that the Executive order that the President issued regarding cyber, and including the notion
of Energy Star ratings for software, so that we all, inside the Federal Government, are purchasing supplies, software, that we know are the best, that have the highest standards, that make us secure. Those efforts inside of DOE are going to require additional resources, hence some of that increase, so both on personnel, as well as coordination, as well as helping develop standards, as well as implementing those standards inside of the Department are all what CESER is working on.

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

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

Secretary Granholm: Yeah. I mean, CESER's communications with the electricity sector are excellent.
We are embedded in the Council, we work with them closely. It is a great example of what the steps are that have to happen. In that Executive order, the President, for example, required that pipelines notify the government if they have been the victim of cyberattack or ransomware attack. That was not required before.

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

Senator Kelly: And beyond even infrastructure, I just want to point out that it would benefit all of us if we could do a much better job sharing this information from the private sector to the public sector, so our law enforcement agencies, Department of Justice, FBI knows what is going on in the private sector. We were discussing this yesterday.
How can we improve that flow of information? Often, you know, companies -- and I understand their rationale for this -- don't always want this information to get out there, so we need to explore options to maybe keep this somewhat private at some level. What we are discussing today is the information that goes from government to private industry. So we have got to do a better job. This is just going to continue, and in my view, accelerate and get worse.

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

Chairman Reed: Quite all right. Without objection.

Let me now recognize, via Webex, Senator Blackburn.

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

So to understand the gravity of the situation, I would like for each witness to provide a specific example of a potential consequence to the stability of the U.S. nuclear enterprise, if it must continue to rely on this aging infrastructure, and talk a little bit about how this is a
budgetary issue, how this is a personnel issue, and how this
a national security issue, because if any facilities
experience operational shutdowns, warhead deliveries may be
affected.

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

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

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

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

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

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

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

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

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

Senator Blackburn: Yeah.

Mr. Verdon: And so those are the ones that we
prioritized to be replaced, effectively as a different approach to deferred maintenance, but we think it is the best approach, and for those other areas we have prioritized the work to the highest-priority buildings that we have on the sites.

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

Senator Blackburn: Thank you.

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

Senator Blackburn: Okay.

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

Senator Gillibrand: Thank you, Mr. Chairman.

Secretary Granholm and Administrator Verdon, I was really pleased to see in your written testimony you mentioned enhancing our cybersecurity across the nuclear enterprise, especially in the wake of the Colonial Pipeline hack, and the targeting of another contractor that works for the government's nuclear programs.

I listened with great interest to your responses to Senator Kelly. But acknowledging that we are in an unclassified setting, do you feel confident about DOE and NNSA's capacity to handle the ever-growing cybersecurity threat from malicious actors and adversaries, and where are
the areas where Congress can be helpful? I did hear you say
you needed funding. I did not know if you need authorities.

How is your ability to recruit and retain key personnel?

Secretary Granholm: Thank you for the question,

Senator. I think there is, right now, an administration
effort on cyber, where we are reviewing all of this. But I
will say that it is clear that there are gaps, not so much
in our ability internally to respond, but in our ability to
seek what is happening in the private sector.

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

Senator Gillibrand: I agree that the status quo is
unacceptable, and we are working on legislation within the
Intelligence Committee to address visibility into the
private sector, and least have mandatory reporting when
private sector has some intrusion. So we are working on
authorities, and this committee will also be working on that
to meet the needs, and I welcome your advice and guidance on
that.

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

Secretary Granholm: Yeah, I think we would welcome a
pool of talented people. We are always trying to increase
our science, technology, engineering, and math pipeline, and
if there were a dedicated place where we could be able to
ensure that we would have some of that talent, and perhaps
even once they are in, recruit them for the long haul, that
would be a terrific gift to the nation.
Senator Gillibrand: Thank you. And one further question. I see that there is some potential for artificial intelligence to help bolster the security of our nuclear weapons systems, but I also have significant concerns given our vulnerability. Again, acknowledging that this is an unclassified setting, what elements of our nuclear command, control, and communication, would you feel more comfortable potentially having AI play a role, and what elements do you believe should firmly remain within the control of human beings?

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

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

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

Senator Gillibrand: Thank you. Thank you so much,
both of you, for your service, and thank you, Mr. Chairman.

Chairman Reed: Thank you very much, Senator Gillibrand. Senator Hawley, please.

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

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

Senator Hawley: Very good. Secretary Granholm, let me ask you to weigh in here. I did want to ask specifically about the space that the campus needs, as well as more general support. So can you comment on that as well, making
sure that the campus has the space that it is going to need?

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

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

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

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

Senator Hawley: So we are looking at, I think you said
50, 50 pits per year by 2032 to 2035?

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

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

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

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

Secretary Granholm: I do and I will.

Senator Hawley: Very good. Dr. Verdon, the NNSA's budget request this year includes several increases in the Production Modernization Account, I noticed. Some of those increases relate to plutonium pit certification activities. Can you say something more about that, what those
certification activities entail, and why you requested the increase?

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

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

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

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