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DEFERRED MAINTENANCE IN THE NUCLEAR SECURITY ENTERPRISE: SAFETY AND MISSION RISKS

HEARING

BEFORE THE

SUBCOMMITTEE ON STRATEGIC FORCES

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

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HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES,
Washington, DC, Wednesday, September 7, 2016.

The subcommittee met, pursuant to call, at 3:29 p.m., in room 2118, Rayburn House Office Building, Hon. Mike Rogers (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. MIKE ROGERS, A REPRESENTATIVE FROM ALABAMA, CHAIRMAN, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. ROGERS. I will call this hearing of the Strategic Forces Subcommittee of the House Armed Services Committee to order. And welcome all of our witnesses on this hearing titled "Deferred Maintenance in the Nuclear Security Enterprise: Safety and Mission Risks."

To kick off the hearing, I want to display a slide provided by NNSA [National Nuclear Security Administration] that encapsulates the challenges that we are dealing with here today.

[The slide referred to can be found in the Appendix on page 79.]

Mr. ROGERS. The enterprise has a $3.7 billion backlog of deferred maintenance it has accumulated over decades, and this backlog is now actively threatening both NNSA's mission and the safety of its workers. As this slide puts it so well, quote, "Infrastructure risks become safety and program risks," close quote.

This slide also shows some very real impacts that infrastructure failures are having. Ranking Member Cooper and I have seen much of this firsthand during our oversight visits to these facilities. Just a small list of the challenges that we have seen include tarps hung over sensitive diagnostic equipment to prevent a leaking roof from destroying equipment worth tens of millions of dollars, chunks of concrete falling from ceilings into operational workspaces, tape and plastic sheeting around pipes carrying radioactive fluids, major hydraulic oil leaks, grass growing through floors.

As this slide describes, many of these failures result directly in program delays and safety risks. Our witnesses highlight this in their written statements. For example, here in General Klotz's statement, quote: "Our infrastructure is extensive, complex, and in many critical areas, several decades old. More than half of NNSA's approximately 6,000 real property assets are over 40 years old, and nearly 30 percent date back to the Manhattan Project era. Many of the enterprise's critical utility, safety, and support systems are

failing at an increasing and unpredictable rate, which poses both programmatic and safety risk," close quote.

And here is Mr. Smith, quote: "Many key facilities at both [Pantex and Y–12] were constructed in the 1940s and were intended to operate for as little as one decade. Many facilities and their supporting infrastructure have exceeded or far exceeded their expected life, and major systems within the facilities are beginning to fail," close quote.

And finally, Dr. McMillan, quote: "One of the things that keeps me up at night is the realization that essential capabilities are held at risk by the possibility of such failures; in many cases, our enterprise has a single point of failure," close quote.

Of course, these infrastructure challenges directly impact NNSA's readiness to respond to new direction and military requirements. Broader defense readiness challenges have been a focus this year of the HASC [House Armed Services Committee], and readiness and responsiveness within NNSA has been a focus of this subcommittee for years. We must ensure not only that people and tools within the NNSA are ready to respond, but also infrastructure.

On the readiness of people and tools front, this committee has continued to advocate the stockpile readiness program mandated by last year's NDAA [National Defense Authorization Act]. On the infrastructure front, we continue to authorize substantial increases to NNSA's infrastructure accounts. But I believe more must be done. We need to be looking to do more, including both tried and true solutions that have worked in the past as well as new innovative solutions.

For instance, the Facilities and Infrastructure Recapitalization Program, or FIRP, was a 10-year, $2 billion effort that started in 2002 and was successful in addressing many of the deferred maintenance challenges. But in the end, it accompanied only a portion of the work that ultimately needs to be done. I think we should be looking for a new FIRP-like program for the future.

We should also recognize the success of recent public-private partnerships in addressing these challenges in innovative ways. The result out at Kansas City, in particular, is indicative of what we can do if we work together and use these kinds of creative approaches.

I want to thank our witnesses for being here. You represent and lead many of the workers within our Nation's nuclear enterprise. We know how hard they work and are grateful to all of you for your service to our country.

Our first panel includes Dr. Charlie McMillan, laboratory director at Los Alamos National Lab; Mr. John Ricciardelli, president, Honeywell Federal Manufacturing & Technologies; Mr. Morgan Smith, president and CEO [chief executive officer] of Consolidated Nuclear Security.

Following these gentlemen in our second panel of witnesses we will also have the Honorable Frank Klotz, Administrator of the NNSA, Mr. Jim McConnell, Associate Administrator for Safety, Infrastructure, and Operations, NNSA.

My sources tell me that today it is General Klotz's birthday, so happy birthday to General Klotz. I would sing to him, but that is pretty bad punishment, so I won't do that.

Finally, I want to highlight the important work being done by the witnesses from both our panels. Under the leadership and direction of Secretary Moniz and General Klotz, you all have put a halt to the growth of deferred maintenance, and that is to be commended.

You recognize that these challenges have a direct impact on your workers' morale, performance, and safety, and I know you are working hard to deliver for all of them. The subcommittee stands by to assist and support you because we recognize how much more needs to be done.

I now turn it over to my friend and colleague from Tennessee, the ranking member, for any opening statement he may have. Roll Tide.

[The prepared statement of Mr. Rogers can be found in the Appendix on page 33.]

STATEMENT OF HON. JIM COOPER, A REPRESENTATIVE FROM TENNESSEE, RANKING MEMBER, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. COOPER. I was hoping you would dispense without any football references, but there at the end you completely blew it.

I too would like to welcome the witnesses, and I would like to ask unanimous consent that my statement be inserted for the record.

Mr. ROGERS. Without objection.

Mr. COOPER. I think the chairman has stated it very well, so I will not belabor the point. We need to get adequate maintenance to all these facilities. It is my impression that Naval Reactors on the whole has done a better job than NNSA. I am not faulting Admiral Klotz because I think he and Secretary Moniz are part of the solution, not part of the problem, but it is going to take many years of sustained effort to solve this problem.

I thank the witnesses. I look forward to your testimony.

[The prepared statement of Mr. Cooper can be found in the Appendix on page 36.]

Mr. ROGERS. I thank the gentleman.

Also, we are going to be interrupted for votes during this hearing. So what I would ask is that—your entire statement is going to be submitted for the record—if you could just take 3 minutes instead of 5 to summarize, so we could try to get both panels done without delaying everybody. But we will, without objection, accept all of your full statements into the record.

I also want to point out that during your testimony when you are making your summary, we are going to be putting up slides to kind of complement what you are talking about, slides that you all have provided about your testimony. You don't have to feel the need to narrate the slides. It is just something we are going to be doing concurrent with your comments.

[The slides referred to are retained in the subcommittee files and can be viewed upon request.]

Mr. ROGERS. And with that, we will go to the first panelist. Mr. Smith, you are recognized for 3 minutes.

STATEMENT OF MORGAN SMITH, PRESIDENT AND CHIEF EXECUTIVE OFFICER, CONSOLIDATED NUCLEAR SECURITY, LLC

Mr. SMITH. Chairman Rogers, Ranking Member Cooper, members of the subcommittee, thank you for the opportunity to talk with you today about the deferred maintenance challenge facing both the National Nuclear Security Administration and, more importantly in my case, the plants that I represent, the Pantex Plant and Y–12.

I appreciate the support of the committee and the support of Congress over the years of our sites and really appreciate the attention you are bringing to this very, very important matter. The quiet but important work that we do at our sites is essential to our Nation and our allies. For me, it is a privilege to work alongside the Federal and contractor patriots that do this work in support of our important mission. However, our facilities have not been immune from the progress of time and the effects of that time, similar to other infrastructure in the country.

Sustaining the facilities while continuing to achieve our mission is a considerable challenge. Attracting and retaining a world-class workforce is also a challenge. The Nation ultimately would benefit from a better long-term approach.

Between Pantex and Y–12, we have approximately $800 million in deferred maintenance currently in our books. Approximately $175 million of that is associated with critical facilities. At today's level of funding, we will not be able to make a substantial reduction in that backlog of deferred maintenance, and the pictures that we are seeing are but the tip of the iceberg relative to what we face.

One of the pictures you see is a ceiling deterioration that occurred from operations above it. It caused concrete to fall. Obviously, in that situation, it leads to both operational and personnel concerns. We have been able to repair the condition relative to the ceiling itself; however, we remain very limited and restricted in our operation of that equipment above that ceiling.

While we will not compromise on safety and security, the backlog and deterioration that we are seeing does require us to deal almost daily with potential disruptions to our mission delivery.

However, we do not sit idly by allowing obsolescence to occur with our systems. Along with eliminating excess and deteriorating facilities, we are embarking on the largest set of capital construction projects that we have had for both sites in decades. We also use public-private partnerships as we have opportunities such as recently occurred with the administrative support complex of Pantex. And then finally, we are our preserving our currently operated facilities through innovative approaches and new technologies.

In conclusion, I believe our overall future approach must continue to, number one, provide for a robust recapitalization program; number two, pursue aggressive disposition of our excess facilities; and number three, reduce deferred maintenance issues through additional funding approaches. Each are essential to preserve the mission work that occurs at both sites; they are essential to ensure the safety of our workforce; and they are essential to help keep

Pantex and Y–12 on track to provide a safe, secure, and effective nuclear deterrent for the Nation.

Again, thank you for the opportunity to speak with you today.

[The prepared statement of Mr. Smith can be found in the Appendix on page 37.]

Mr. ROGERS. Thank you, Mr. Smith.

Dr. McMillan is recognized for 3 minutes.

STATEMENT OF DR. CHARLES F. McMILLAN, LABORATORY DIRECTOR, LOS ALAMOS NATIONAL LABORATORY

Dr. MCMILLAN. Chairman Rogers, Ranking Member Cooper, members of the committee, thank you for the invitation. I am Dr. Charlie McMillan. I am the director of the Los Alamos National Laboratory.

We have recently marked the 20th anniversary of the Stockpile Stewardship Program. This program has allowed the National Nuclear Security Administration's laboratories to certify this Nation's nuclear deterrent that it is safe, secure, and effective.

Our stewardship efforts would not have been possible without the strong support for significant investments in infrastructure from this subcommittee, Congress, and many administrations. Stockpile stewardship required the construction of new supercomputers, new experimental facilities, and these have helped the United States assure our allies and deter our adversaries.

However, key elements of today's nuclear weapons infrastructure were designed and constructed during the Cold War. Because it is more difficult today to bring new facilities online, we must continue to operate existing facilities longer than we had anticipated when they were originally built. And we have to do that and ensure that we do not place our workers, the public, or our mission at unacceptable risks.

Just last week, I was discussing these issues with my colleagues at Sandia and at Livermore, and we all shared the concern that some of our critical facilities are being run to failure. Because infrastructure funding is a finite resource, I believe that upgrades for replacement activities have to be taken with a very sharp focus on the economics.

To this end, staff at Los Alamos, working with our NNSA partners, have developed a modular strategy for bringing new infrastructure online. We believe that this will help both with the economics as well as with timely delivery when facilities are needed.

These types of facilities, together with those associated with things like high-performance computing, our uranium facilities, and experimental facilities are all facilities that warrant and merit the greatest congressional focus.

In your invitation, Mr. Chairman, you ask about things we might do to improve infrastructure. There are three things I would like to highlight for you.

First of all, there is a category referred to as general plant projects. These allow us to use relatively small amounts of money focused locally to be able to address issues.

I would highlight for you that at Los Alamos today we have trailers that were put into service 30 years ago. And in some of those

trailers we have problems with ceilings, water damage, falling in, we have problems with rodents in them. They need to be replaced.

Over the last 10 years, we have been able to cut the number in half. We still have a long way to go. General plant projects let us do this. And I would recommend to you considering to index that money. It was last changed in 2009.

Second, third-party financing. You mentioned that in your opening remarks. This is particularly important for my colleagues at Livermore and Sandia.

Finally, innovative public-private partnerships. Today at Los Alamos we are working closely with our NNSA field office to be able to bring some of these projects online. We would like to be able to do that.

Thank you for the invitation to speak today.

[The prepared statement of Dr. McMillan can be found in the Appendix on page 48.]

Mr. ROGERS. Thank you, Dr. McMillan.

We have been called for votes. We have 7 minutes to get across the street. So we are going to suspend the hearing while we go and vote. We should be back in almost exactly 60 minutes. So I apologize for the inconvenience, but they don't ask me when to call us for votes.

With that, we will recess briefly.

[Recess.]

Mr. ROGERS. I call this hearing back to order.

Mr. Ricciardelli, I know you have been anxiously anticipating this. The floor is yours.

STATEMENT OF JOHN RICCIARDELLI, PRESIDENT, HONEYWELL FEDERAL MANUFACTURING & TECHNOLOGIES, LLC

Mr. RICCIARDELLI. Thank you, Chairman Rogers, Ranking Member Cooper, and members of the subcommittee, for inviting me to testify before you today. I am John Ricciardelli, and I am the president of Honeywell's Federal Manufacturing & Technologies, which has a proud history of serving as the prime contractor to the Department of Energy's Kansas City National Security Campus [KCNSC] for nearly 70 years.

The KCNSC is a 1.5 million square foot multimission engineering and manufacturing facility that supports the NNSA's national security mission. Our primary focus is modernization of the Nation's nuclear stockpile using the latest technologies to deliver a safe, secure, and reliable nuclear deterrent.

It is an exciting and challenging time in the nuclear security enterprise with several life extension programs being addressed through their development phases simultaneously. Our facility is witnessing growth this year to support these important objectives.

And while it is an exciting time at the KCNSC, we have had similar challenges to my colleagues next to me. About 10 years ago, we were faced with increasing pressure on defense budgets and growing deferred maintenance costs at Kansas City's aging facility. Honeywell was challenged to help the Federal Government continue its mission in the most cost-effective way possible.

The aging infrastructure at the Bannister location made installation of modern equipment difficult, expensive, and hazardous to the

mission as well as the personnel. Further, significant time and money was being spent on emergency repairs and facility upgrades for the emerging programs.

Honeywell implemented a responsive infrastructure strategy to address these challenges. As a result, we now have a newly constructed state-of-the-art facility that features a flexible manufacturing design and 50 percent lower energy consumption, and we are also delivering over $150 million of savings to the taxpayers annually.

Today, we are more agile in adapting to changing mission requirements. We are better positioned to recruit and retain the next generation of scientists and engineers. Safety hazards have been greatly reduced at the new facility as well, as evidenced by our safety performance. And, in fact, we just celebrated 3 million hours without a lost-time injury.

The new campus utilized a third-party lease agreement for several reasons. The annual lease costs of the new facility were much more economical than the annual maintenance costs of the old building. A private developer was used and was able to build it more efficiently, assemble tax credits and financing. And finally, the campus can be used for other purpose if the government no longer needs it or if the government can buy it at any point for fair market value.

While Honeywell used commercial best practices to deliver on the responsive infrastructure strategy, I would also like to elaborate on the importance of contractor oversight reform and how that has played an important role in the successful operation.

Today, Honeywell and NNSA created the Kansas City Governance Model, a revolutionary reform of government oversight that reorients how Americans see performance in the government. The shift overall reduces costs without sacrificing public trust and utilizes a simpler governance model that capitalizes on private sector enterprise.

To apply this model at other sites, the NNSA's operating partners must do what Honeywell does daily: focus on getting results in a sustainable way while eliminating costs. We are committed to assisting the transformation through ongoing collaboration and best-practice sharing with our NNSA site partners.

However, our work is not done yet. NNSA continues its effort to ensure that the old Bannister property be redeveloped in an efficient, safe, and environmentally responsible manner and not be left as a blight on the community. By funding the transfer of the Bannister facility in fiscal year 2017, the government will eliminate most of the future environmental liabilities through third-party demolition and remediation and could save approximately $650 million.

So once again, thank you, Mr. Chairman, for allowing me to address this committee. We are all connected through a shared goal of keeping our great Nation safe and secure.

[The prepared statement of Mr. Ricciardelli can be found in the Appendix on page 59.]

Mr. ROGERS. Thank you. And I thank all the witnesses for their opening statements. I know it takes a lot of time to prepare for this, and I appreciate that.

I will start off by recognizing myself for questions.

You all heard my opening statement and some of the things, the infrastructure challenges that I described throughout your facilities. Ranking Member Cooper and I, as you know, have visited several of these facilities and seen some pretty shocking examples of the problems that you face in these very highly secure facilities.

But I would like for each of you, if you could, to take a moment and describe for me in detail some of the infrastructure failures that you have seen and the consequences they have for your facility.

We will start with you, Mr. Smith.

Mr. SMITH. One of the pictures that you had up that I noted in my opening remarks was the ceiling failure that occurred as a result of Kathene leakage from Kathabars above, which the impact of that is the Kathene eats away the reinforcing bars, which greatly weakens the floor.

At this point, we can only allow two people into that area where you have tons and tons of equipment at a time to do any work, and it is just a systematic failure. But when that equipment goes down, we have no ability then to go process the materials in that particular facility because that facility requires a very, very dry environment to safely and appropriately process the materials.

So that is one example. Another example on the same site, I was at work not more than about a month ago on a Sunday morning, and I had just left to go to church with the intent to come back when I received a page that one of my utility workers, doing a rather routine task over a pit—and this pit was basically grating over top of it with end supports on each end and a center beam in the middle, and as she was doing that work, the structural steel holding up the grating on one end failed. And as you can imagine, you are on the wrong end of the seesaw at that point and you go down.

In that case, fortunately, she sustained only a very minor injury, which I think was a grace-of-God moment in that case, but a very real facility issue with a person just doing a routine job.

I had another one of those a couple months before that where a forklift drove onto what looked to be a pad. It was actually an extension of a basement. The structural steel in that area due to environmental attack over the years, salt and so forth that you use for the weather conditions, had led to that structural steel failing to the point where we had a collapse and a buckling of the concrete or a depression in the concrete and a failure of the structure, but not something that led to an injury as well.

At Pantex, we deal with fire lead-ins to our bays and cells. We are on a major replacement program that will take another 10 years. But when they fail, and they fail without warning, you can lose bays or cells. We recently had one where we lost a number of bays and cells and the ability to use it until we can go in and do the repair. And that just leads to an inherent unreliable condition and set of services.

And I can probably go on, but that is probably sufficient. Give others time to comment.

Mr. ROGERS. Yes.

Dr. McMillan.

Dr. MCMILLAN. Mr. Chairman, let me just give you an example from last weekend. We had the air conditioning system in one of our vaults for one of our classified computers fail, and when that went down it took down the computing equipment that is needed to support our experimental work. That is a recent example.

Let me say a few things about things we are acting on, but they illustrate the problem. Both we and our colleagues at Lawrence Livermore Laboratory are replacing major parts of our electrical infrastructure. Same kind of problem. If we have electrical failures, our computers go down, the work that we do to support the stockpile we can't do. Our accelerators go down if we don't have power.

Third area, again, that we are taking action on, but it is overdue: The steam plant for the laboratory is finally on the verge of replacement, good public-private partnership on that one. But if we lose our heating systems in the wintertime, it is cold in Los Alamos. And sensitive scientific equipment does not do well when it freezes, nor do our buildings.

And so those are the kinds of things that they are very fundamental infrastructure issues, they don't have high profile, but if we don't take care of those kinds of really basic things, we are not going to be able to serve the mission. And it affects, as my colleague said, not only the mission but also the safety of the people.

I would offer as a final comment, when I talk to my craft people, the folks who have their hands on things like our electrical and our plumbing systems, one of the problems that they are dealing with day in and day out is how old these systems are. So if they were working on a modern strip mall, things would be uniform. When they go into one of my switch gears, they are dealing with stuff that was built in 1960, and they have to figure out how to make it work. And not only is that a maintenance problem, it is a safety problem.

Thank you.

Mr. ROGERS. Mr. Ricciardelli.

Mr. RICCIARDELLI. We are lucky because in the new facility, obviously, we don't have the same issues as my colleagues. But as you saw from the pictures, the Bannister facility, which we are still maintaining, even to this day, has about 45 people there that are just maintaining the HVAC [heating, ventilation, and air conditioning] system, the electrical systems, all of the infrastructure that still has to be kept up.

And you can imagine back many years ago with that kind of aging system, with 6,000 people working that facility, how hazardous it was at that point.

So with the new facility, we actually have 10 percent of our lease goes into maintaining the facility, and that will ensure that deferred maintenance will never be a problem. But, again, once we get the funding we can get rid of the Bannister and take care of a lot of that issue that we are still dealing with even to this day.

Mr. ROGERS. Okay. You all heard me make reference to the fact that there is across the NNSA $3.7 billion in deferred maintenance. Let me ask this question. At the pace that you have been addressing deferred maintenance—and this will be really for Mr. Smith and Dr. McMillan—at the pace you have been addressing deferred maintenance over the last 5 years, when will you ever or will you

ever be able to catch up and have completed the deferred maintenance obligation that you have before you?

Mr. Smith.

Mr. SMITH. Mr. Chairman, we have had success in reducing it over time. I believe that there are several points that need to be taken into consideration when you answer that question. One is we have to continue to retire the old facilities and tear them down. That is one of the ways that we reduce the deferred maintenance. The next is continue to find innovative ways to do it, use tools like BUILDER.

But in the end I would say, absent additional funding and given the trajectory we are on, we will never reduce it to zero, as you would envision it, because some of these systems just have to be replaced in the end.

Mr. ROGERS. Dr. McMillan.

Dr. MCMILLAN. Mr. Chairman, as I look at the list that we have at Los Alamos, there are a couple of things I would note. One, we have been working very closely with the NNSA to better estimate what the numbers are. And I think within a year or so we will be in a better position to give you updated numbers. And I look forward to what Frank Klotz has to say on that, because I know he is very aware of the work we are doing.

As I look at the list at Los Alamos, there are several big items that when we are able to actually take them off the list, as my colleague said, they will make substantial reductions. A good example of that is the chemistry and material research facility. When we are finally able to retire that system and then take the building completely down, that will take down a big chunk. Similarly, I mentioned earlier our steam plant, another big chunk when we can get that done.

And for most of the work that we have, we have plans in place and we are off working on those plans. My estimate is that it is roughly a decade of work to work that off, assuming, of course, we continue to get stable funding and we are able to spend it. So it is on the order of a decade.

Mr. ROGERS. At the clip that you have been addressing this issue you think in a decade you will have addressed all the issues that are on your current list. What about the issues that are arising over the next decade?

Dr. MCMILLAN. That depends again on funding, Mr. Chairman.

Mr. ROGERS. That is the whole point. My argument is this: You are never going to resolve these deferred maintenance issues at the pace we have been addressing them. That is how we got this $3.7 billion backlog. It is not going to happen. You are being overly optimistic if you think that we are going to be able to address this.

I understand it is your job to be optimistic. It is my job to be realistic. And I am very frustrated. And this is the Congress' fault, not yours, that the Congress has not more aggressively tried to get ahead of these maintenance issues.

Dr. MCMILLAN. Well, and if I could look backwards, something that has helped over the last decade was the Facility and Infrastructure Recapitalization Program, what is called FIRP, and you mentioned that in your opening remarks. The big deal with that was that it put new dollars on the table.

Mr. ROGERS. Right.

Dr. MCMILLAN. It was new dollars coming into the laboratories and across the whole system. And as those dollars came in, we were able to prioritize them, we worked at a national level to do those priorities, and that made a difference. When the FIRP dollars went up, the deferred maintenance came down.

Mr. ROGERS. So those are gone?

Dr. MCMILLAN. Yeah, they are gone, but there is no magic in this. It is dollars.

Mr. ROGERS. I completely agree.

With that, I yield to the ranking member for any questions he may have.

Mr. COOPER. Thank you, Mr. Chairman.

Mr. Smith, did I hear in your testimony the word "caffeine" when you talked about the collapsed roof?

Mr. SMITH. Yes, sir.

Mr. COOPER. So caffeine from above dripped down and weakened the structural steel and the concrete?

Mr. SMITH. Yes, sir.

Mr. COOPER. Whence did this caffeine come?

Mr. SMITH. It comes out of the Kathabar system. It is a dehumidification system that is used to treat and control the atmosphere in that particular facility. And over the years, leakage occurred, various conditions set that up. This goes back quite a period of time ago.

Mr. COOPER. So this isn't caffeine like coffee?

Mr. SMITH. No, sir. It is a specific fluid used for purposes of dehumidification.†

Mr. COOPER. Presumably, massive amounts of caffeine?

Mr. SMITH. Yes, there are big units.

Mr. COOPER. Was this leak of industrial caffeine not detected?

Mr. SMITH. I honestly could not tell you exactly what happened years and years ago when it occurred. I really don't have that history. I just know the consequence of what happened.

Mr. COOPER. Second type of question, and it may be for Mr. Ricciardelli more than for anyone else. You mentioned in the lease agreement a 10 percent set-aside for future maintenance. I am almost wondering if it is budgeting malpractice in Congress if for any new project we do not set aside funding for future maintenance, because everything has to be maintained. And if we have funding for capital projects without that future maintenance, then we are blinding ourselves to the obvious.

Mr. RICCIARDELLI. It is one of the benefits of the private-public agreement that we have in there. Not only did we reduce the cost of operation from $120 million a year down to $60 million a year, we got rid of $238 million worth of deferred maintenance that was left at the Bannister plant. And, in fact, all the maintenance is now done by the developer, and they set aside 10 percent of our lease payment to make sure that over the 20 years that they continue to maintain the facility at the current conditions.

Mr. COOPER. I know that is specific to your lease agreement, but in any budget, you could set aside money. I think sometimes it is

† The specific fluid is Kathene, not caffeine.

called a sinking fund or amortization. There are various ways of describing it. But when we just appropriate money for a project and think that is it, we are generally leery of cost overruns and construction of the project, but we have given little thought to the maintenance needs that are likely to happen, in fact, inevitably going to happen in the future.

Right now, we are repairing the Capitol dome for the third or fourth time in American history, and we will probably need to do that again in the next 30 or 40 years. It is just one of those inevitable things.

Mr. RICCIARDELLI. And I think if you use good project management, planning the move from the old facility to the new facility will demonstrate that you could actually do it ahead of schedule and under cost. We did it for about $18 million less than we thought we would spend. And, again, that could be used for some of that deferment or for the maintenance in the future as well.

Mr. COOPER. Mr. Smith and I were just in Oak Ridge for the uranium processing facility, one of the early steps there, a $6 billion facility. So have we set aside money for the maintenance of that?

Mr. SMITH. At this point, I am unaware that we have, sir. But I need to take that as a takeaway and go do some reflection on that.

[The information referred to can be found in the Appendix on page 87.]

Mr. COOPER. Might be a good idea, at least for your successor's successor's successors.

Mr. SMITH. Yes, sir.

Mr. COOPER. Thank you, Mr. Chairman.

Mr. ROGERS. I thank the gentleman. Don't you find it interesting that in the public-private partnerships we require them to set aside money for deferred maintenance but yet we don't do it in our own budgeted project items? You are right, it is malfeasance.

Mr. COOPER. Hello——

Mr. ROGERS. The gentleman from California, Mr. Garamendi, is recognized for 5 minutes.

Mr. GARAMENDI. Thank you. I am trying to catch up. My apologies for not being here earlier today. I am missing some of the opening statements, so I will try to play catch-up here.

It appears as though we are looking at specific facilities on these campuses. And I am curious what the overall program is for the totality of the campus. I noticed that there are certain buildings that have been replaced, the Kansas City facility, for example, some public-private partnerships at Y–12, all of which seem to work good. I am familiar with some of the things that have gone on at Livermore.

Do we have an overall plan on what needs to be done in the various facilities? The chemistry building at Los Alamos, obviously, in play here, but there is also the plutonium facility and the like. Yes, we know there is a problem. We can look at pictures as well as anybody else. But what is the overall program. Let's just take Los Alamos, since you happen to be here, Dr. McMillan, and share with me and the rest of us what needs to be done in the various facilities and then the associated cost.

Dr. MCMILLAN. So, yes, we have a 10-year site plan that we look across all of the facilities on the site, not just individual ones, as you have rightly recognized, Congressman. Let me talk a little bit about some of the things that emerged from that plan that I think can help address your question.

As I mentioned in my testimony, we are hiring approximately a third of our 10,000-person workforce over the next 5 years. A consequence of that is that we need space for uncleared employees first. And then as they get their clearances, which is a time-consuming process right now, we need space to be able to convert that space into cleared space so that they can do classified work in that space.

So in our 5-year site plan, we have taken that kind of progression into account to ensure that we will be able to have the people that the Nation needs, and that as they are cleared, they have spaces to work in.

As we look at our oldest facilities, we are using our overhead money to retire some of the oldest facilities. And then what we are often doing is taking shells—so the concrete is still in pretty good shape for many of our buildings—and then we are putting in new air conditioning systems, new plumbing systems, new air handling systems for being able to do light lab space.

So we are trying to do things as efficiently as we can to provide the space for our workers. But we have a 10-year site plan and then we work down that plan.

Mr. GARAMENDI. I assume you have made that information available to this committee?

Dr. MCMILLAN. We have made it available to NNSA. We can certainly make it available to the committee if you would like to see it, yes.

Mr. GARAMENDI. Yeah. I, for one, would like to see the overall plan that you have.

[The information referred to can be found in the Appendix on page 87.]

Mr. GARAMENDI. You did raise an interesting question—I assume there is a very good answer to it—and that is the—actually, you seem to be having to double the space as new people come in and then clearance?

Dr. MCMILLAN. No.

Mr. GARAMENDI. Did I misunderstand you?

Dr. MCMILLAN. No, we aren't doubling the space. We need space that is initially available for people without clearances.

Mr. GARAMENDI. So that is separate from the——

Dr. MCMILLAN. From the cleared space, but that we can then convert into cleared space so that we will be able to have them—we are not doubling the space, absolutely not. We can't afford to.

Mr. GARAMENDI. That caught my attention.

Dr. MCMILLAN. Yeah, no, we can't afford to.

Mr. GARAMENDI. So you recycle it and use it as secured space later.

Dr. MCMILLAN. Absolutely. And then we can convert it into secured space. Because, no, we can't afford to double space. There is no way.

Mr. GARAMENDI. That is, I am sure, true.

You know that I have got problems with this, the size of the plutonium facility, and that is another question. I know that there was some question about whether it really needs to be rebuilt or not, whether you can repurpose it, as you just described, with those other facilities that have good concrete. And so I would like to see more detail about that.

The other question, and this goes to Mr. Ricciardelli. You talked about the reduction in operating cost. Could you describe why that happened?

Mr. RICCIARDELLI. So our operating cost in an old facility at Bannister, just keeping ahead of operations, was about $120 million a year. Through the private-public relationship with the developer, we basically built a $653 million facility, and we agreed to a lease rate of $60 million a year for 20 years.

Mr. GARAMENDI. And they are responsible for the maintenance and upkeep during that 20-year period?

Mr. RICCIARDELLI. They are responsible for all of the maintenance. The only thing that we maintain in the building is the capital equipment. But all the facilities, all the infrastructure, the parking lots, the landscaping, everything is done by the developer.

Mr. GARAMENDI. That is another question—I have got 10 seconds. No, I have no seconds.

I yield back. Thank you.

Mr. ROGERS. I wanted to follow up with Mr. Ricciardelli and Mr. Smith.

At both your sites you have had successful public-private partnerships to deal with some of your infrastructure challenges. Can you tell us a little bit about why those were successful and just describe what else you think we could use that model to address?

I will start with you, Mr. Smith.

Mr. SMITH. I believe they have been successful because it is an opportunity to essentially gain access to a significantly sized facility that enables us to house our workers and accomplish the mission in space that, again, will be maintained through that lease arrangement so it does not deplete your resources on the site and it enables you to get out of much older facilities that have legacy-deferred maintenance issues on it. And thus far, we have been able to find developers who are very interested in doing it. They like working with our sites, and they give us very favorable rates for those leases.

Mr. ROGERS. Is there another infrastructure challenge that you face that you think that would be a good model for us to use to address it?

Mr. SMITH. There are a number of areas that we need to look at. One of the alternatives being looked at for a new lithium facility would be a public-private partnership. That would impact Y–12. You need to find facilities that you could repurpose as the lessor someday to other use. Engineering development could be an aspect of that. Warehousing can be an aspect of that. There may be a number of things. It somewhat depends on where you need be relative to the security fence as well.

Mr. ROGERS. Okay.

Mr. Ricciardelli.

Mr. RICCIARDELLI. Yes, sir. I think the private developer has the ability to bring in the funds that the government doesn't have access to. So in our case, they went through private bond financing, they got local tax incentives from the municipal areas as well. And they were able to get money to fund these programs. And again over 20 years it will be a profitable program for them and they were willing to invest in that.

I think in order to replicate it, to your point, we are going to probably have to look at some of the rules that limits the amount of private building on public lands, because in order to recapitalize it, in our case it is on public land, private land, and they can take it over if we decide to vacate it and turn it into an engineering or a manufacturing source.

So I think in order to replicate it at some of the sites that are owned by the government, we may have to look at some of the rules that limit the ability to bring in private developers.

Mr. ROGERS. Lastly, Dr. McMillan, I know you have talked about the—not today, but previously—your challenges in replacing your workforce, and it has been a monumental effort as baby boomers start to retire. Talk a little bit about the impact of these infrastructure challenges on the people you are trying to recruit into your workforce and the kind of people you are having to compete with, briefly.

Dr. MCMILLAN. Yeah. Thank you, Mr. Chairman.

As I mentioned in my oral testimony, we are hiring approximately a third of the laboratory.

Mr. ROGERS. Which is how many people?

Dr. MCMILLAN. It will be about 3,000 people. The total laboratory today there are about 10,000 people at work today. And we are having to put many of those people into what is unquestionably substandard space. I mentioned problems with ceilings. We have had ceilings fall in in some of our trailers. Fortunately, no safety problems. We take care of that.

Mr. ROGERS. What kind of candidates are we talking about?

Dr. MCMILLAN. We are talking about Ph.D.s, Mr. Chairman. Ph.D.s, master's students.

Mr. ROGERS. Engineering?

Dr. MCMILLAN. These are people in physics, engineering, chemistry, hard sciences.

Mr. ROGERS. What is the reaction you get when you bring those people in and show them where they will be working?

Dr. MCMILLAN. I have had some of them to my house for dinner, and they are appalled. When their comparison is what is happening in Silicon Valley, we aren't even in the same league. Now, maybe we shouldn't be in the same league with Silicon Valley, but at least it ought to be a safe and—let me say it this way: We are hiring the next generation of the stewards of the stockpile today. That is what we are doing. We need space that is worthy of their service to the country.

Mr. ROGERS. Well, and we need them to be able to come and work for us. That is my concern, is that if you bring in these people who have a lot of options, they are well educated and in high-demand careers, I think it demonstrates we don't value them, their

work, if we are going to put them in a building that has got grass growing through the cement floor.

Dr. MCMILLAN. That is right. It needs to be worthy of their service to the country.

Mr. ROGERS. Yeah.

With that, I yield to the ranking member for any additional questions he may have.

Mr. COOPER. I have no more questions, Mr. Chairman.

Mr. ROGERS. The gentleman from California.

Mr. GARAMENDI. Once we get those documents about your overall plan, there won't be any questions.

Mr. ROGERS. With that, I will tell the panelists, we thank you for your testimony, your presence here today, and we will adjourn this panel and bring in the second panel.

Mr. RICCIARDELLI. Thank you.

Dr. MCMILLAN. Thank you.

Mr. ROGERS. All right. We will call the second panel to order and recognize our witnesses, General Frank Klotz, Administrator of NNSA.

Happy birthday.

General KLOTZ. Thank you, sir.

Mr. ROGERS. And Mr. Jim McConnell, Associate Administrator for Safety, Infrastructure, and Operations at NNSA.

And I understand that only General Klotz has an opening statement for the record. So you are recognized to summarize your statement.

STATEMENT OF LT GEN FRANK G. KLOTZ, USAF (RET.), ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION, ACCOMPANIED BY JAMES McCONNELL, ASSOCIATE ADMINISTRATOR FOR SAFETY, INFRASTRUCTURE, AND OPERATIONS, NATIONAL NUCLEAR SECURITY ADMINISTRATION

General KLOTZ. Okay. Thank you, Mr. Chairman. And I hope because it is my birthday you will indulge me. I take great pride in starting on time and ending on time, but I may take an extra minute or two in the opening statement.

Mr. ROGERS. If you want extra time, go ahead.

General KLOTZ. Thank you, sir.

Chairman Rogers, Ranking Member Cooper, members of the subcommittee, thank you for the opportunity to discuss the challenges and the steps taken by the Department of Energy's National Nuclear Security Administration to address deferred maintenance and the risks associated with aging infrastructure.

I am pleased today to be joined, as you said, by Jim McConnell, who is NNSA's Associate Administrator for Safety, Infrastructure, and Operations, a new position, by the way, that we have created in the past 2 years specifically to focus like a laser beam on these issues.

Let me emphasize at the outset that the success of the Nation's nuclear security enterprise and its workforce depends upon safe, reliable, and modern infrastructure at our laboratories and at our production plants.

Although the role of nuclear weapons in our national security strategy is widely understood and enjoys broad bipartisan support, the link between nuclear deterrence and the infrastructure that supports it is less well appreciated.

While much has been accomplished over the past two decades to construct the new experimental facilities and high-performance computing capabilities required to certify annually the nuclear weapons stockpile without nuclear explosive testing, investment in infrastructure has generally not kept pace with the growing need to replace Cold War-era facilities.

I can think of no greater risk to NNSA's multiple and vital missions than the current state of our aging infrastructure. We are long overdue to build a modern, safe complex that will meet military requirements, keep the deterrent safe, secure, and effective, and enhance worker and public safety.

At the end of fiscal year 2015, as you have already pointed out, Mr. Chairman, the backlog of deferred maintenance at NNSA sites totaled approximately $3.7 billion. As one of his major management initiatives, Secretary of Energy Moniz directed that the infrastructure investment across all of the Department of Energy, including the NNSA, be requested at levels sufficient to halt the growth of deferred maintenance starting in fiscal year 2016.

Accordingly, NNSA's fiscal year 2016 budget request, subsequently supported by this Congress, will halt the growth of deferred maintenance in the current fiscal year, and NNSA's fiscal year 2017 budget request, plus this committee's mark, if similarly supported by the full Congress, will actually begin to decrease the backlog in NNSA's deferred maintenance in the coming fiscal year.

I would like to highlight a few of the steps NNSA is currently taking to reduce deferred maintenance. Now, these are described in greater detail in our written statement.

But in sum, first, we are increasing funds for recapitalization and maintenance efforts. Second, we are also deploying innovative, best-in-government project management tools to make risk-informed investment decisions to reduce deferred maintenance. Third, we are prioritizing recapitalization projects with deferred maintenance reduction as a key criterion. Fourth, we are increasing buying power by expanding efforts to strategically procure common building systems across the enterprise, such as roofs and HVAC systems. Fifth, in close consultation with this subcommittee, we are completing a site condition review of the physical security systems at all NNSA facilities to develop a security refresh strategy over a 10-year period. And six, we continue to make progress in disposing of excess facilities.

On that front, the administration's fiscal year 2017 budget request includes $200 million to dispose of the 3 million square foot Bannister Federal Complex in Kansas City that you have already discussed in the previous panel. The plan for this project, which involves transferring the property to a private redeveloper, will save the taxpayer as much as $500 million when compared to the government's cost to complete the decommissioning if we were to do it directly. Congress has supported this effort, and it is vitally important that the full funding be available in early 2017 to execute this project as planned.

Finally, NNSA is recapitalizing its infrastructure using traditional line item capital construction projects as well as a number of innovative approaches. You have already heard about one of those. Again, the Kansas City National Security Campus, which we dedicated in 2014.

This magnificent facility allowed us to move out of the antiquated Bannister Federal Complex, cut our footprint in Kansas City in half from 3 million square feet to 1.5 million square feet, enhance the productivity and morale of our workforce, and reduce operating and maintenance costs, as you heard, by $100 million per year. Significantly, the new facility was constructed by a private developer using third-party financing made available to the NNSA through a GSA [General Services Administration] lease.

And just last month, NNSA broke ground on the administrative support complex at Pantex, which also uses an alternative financing approach. This project will allow roughly 1,000 employees to move out of 1950s-era buildings into a modern, energy-efficient workspace. It will also eliminate approximately $20 million in deferred maintenance at Pantex.

We strongly believe the greater use of such approaches to recapitalizing our aging infrastructure should continue to be explored.

Although we have made important progress in tackling deferred maintenance and recapitalizing our infrastructure at all of our sites, a great deal of work, in my opinion, still remains to be done. The strategy, the plans, the processes, and many of the tools for arresting the growth of deferred maintenance, disposing of unneeded facilities, and improving infrastructure management are in place.

At the end of the day, however, it ultimately comes down to the level of resources made available, and I would submit now is the time to invest in them and for the years to come.

With that, I look forward to answering any questions you and the subcommittee may have.

[The prepared statement of General Klotz can be found in the Appendix on page 67.]

Mr. ROGERS. Thank you for that. I think that we can't help but take note of—you said a lot of important things, but one particular statement, and that is that there is no greater risk to our nuclear enterprise than this deferred maintenance. To ignore that, I think, would constitute congressional malfeasance. And I appreciate your candor in making that statement.

One question I asked the panelists before you was, at the pace that we have been taking deferred maintenance dollars and putting them against this challenge, do you believe that we will ever be able to get ahead of the maintenance issues that face the NNSA?

General KLOTZ. Let me be perfectly honest about this. I spent a number of years, as you know, in the military, and every year you operate under a set, relatively constrained budget. That budget may go up a few percentage points as a result of inflation or new missions, but for the most part, it is a fairly stable amount of funding that you get unless you are in a crisis or some other emergency.

Right now, the NNSA has a lot of very, very important missions, whether it is life extension programs, stockpile stewardship, or our programs to reduce nuclear dangers around the world, Naval Reac-

tors. So within that particular set of missions that we have to do, there is not a lot of additional funding to spend on deferred maintenance.

The experience I had in the military was the first dollar always goes to the mission, to the pointy end of the spear; the next dollar goes to the people who have to employ that spear; and then, if there is money left over, then it goes into infrastructure and deferred maintenance.

And every year commanders would make the decision: I have to pay for mission, I have to pay for people, I will take risk this year on deferred maintenance or recapitalization and hope that I get additional money next year. And then 1 year becomes 2 years, becomes 5 years, becomes 10 years.

So I think absent some dedicated resources for dealing with the deferred maintenance process, we are going to be able to do some of the things that we have done under Secretary Moniz's leadership to sort of halt the growth, but to really turn it around and make a huge dent in it is going to require investment over a long period of time specifically devoted to this.

Mr. ROGERS. So at the pace we have been meeting that challenge, will we ever accomplish it without additional money?

General KLOTZ. In my opinion, sir, no.

Mr. ROGERS. General Klotz, we have discussed the topic of this hearing many times in the past, and I want to thank you and Secretary Moniz for your engagement and personal leadership on this issue. I think we are getting traction now, but we both know we need a lot more to do.

To that end, how can we all ensure that regardless of who the next President is, the attention, focus, and funding needed for NNSA's infrastructure and deferred maintenance challenges continue into the next administration?

General KLOTZ. Well, thank you. That is, I think, an extraordinarily important question. I think there is a general consensus within the Department of Energy [DOE], including the professional civil service, who will continue to work through any transition in NNSA, and as you heard, from our M&O [management and operating] partners at the laboratories and the production plants, as well as in Congress and in this committee, that NNSA's infrastructure presents a risk to our strategic deterrent and has to be addressed with some urgency and with resources and with focus.

Now, as I mentioned in introducing or alluding to the fact that Jim McConnell was also here, we created a position within or an organization within NNSA specifically to deal with that—we call it the Office of Safety, Infrastructure, and Operations—back in January 2015 to make sure that we had the focus on this issue. We have also, and Jim can talk about this in greater detail, set up a number of processes and tools within the NNSA to help us understand, analyze, and keep focus on this.

And then at the broader DOE level, under Secretary Moniz' leadership, we have established key groups, again, predominantly senior career service professionals, to sustain the effort, such as the Laboratory Operations Board, the Infrastructure Executive Committee, and others. And Jim, by the way, who is a career senior executive in the civil service, is a member of all of those groups.

So I think we have put in place the foundation to continue that work as we transition to a new administration and a new Congress. And, oh, by the way, one of the first things I will tell the transition teams when they come in after the election is the importance of keeping a focus on this.

Mr. ROGERS. I appreciate that. I am concerned that as Secretary Moniz has outlined in a letter to OMB [Office of Management and Budget] last December, which I will introduce for the record, NNSA's outyear funding levels are, quote, "still only half of the $2.8 billion needed to address infrastructure in the future," close quote.

[The letter referred to can be found in the Appendix on page 80.]

Mr. ROGERS. How do we ensure that this new administration recognizes this shortfall and requests appropriate funding from the Congress?

General KLOTZ. Well, again, Mr. Chairman, we have laid out, both in our internal documents as well as reports that we have sent up to the Congress on our infrastructure needs, our recapitalization plans, our use of, our ideas on using third-party financing. I think we have built a good series of documents and a case which will be clearly one of those things that we pass on to the transition teams as they come in.

Also, one of the things we do, we also, as you know, every year put out the Stockpile Stewardship Management Plan, and we have our other plan on countering and preventing and responding to nuclear dangers across the world, which also lay out the infrastructure that is required to underpin those critical missions, and our Naval Reactors folks as well send forward similar reports.

Mr. ROGERS. Mr. McConnell, does NNSA have a plan for how to tackle this backlog of deferred maintenance, and how much will that plan cost us in the near term to make a significant dent in this problem?

Mr. MCCONNELL. Yes, sir, we do. You heard from the first panel that on a site-by-site basis we construct something called a 10-year site plan, which is an integrated assessment of what each site needs to support its part of the mission. As you know, there are eight sites that have to come together in an integrated whole to satisfy our mission. They go out 10 years, is about as far as the planning horizon starts to get too fuzzy.

What we have done very recently is create a master asset plan, which is five-eighths of the way through development, that takes those individual site plans and then brings them up and connects them one level higher as an enterprise level to make sure that we can balance risk and investment needs not only to 10 years, but out to hopefully 25 years at an enterprise level so that we can connect the infrastructure conditions to its risk posed to the mission and then be able to make prioritized investments across the entire enterprise to optimize our success and to minimize our risk.

Now, that gives us an integrated list of what to do when. The question of how long it will take gets back to the resources applied to it. So as you indicated, and as the Administrator indicated, we didn't get into this problem in a short amount of time. It will take us time to get out of it. But with the concerted resources that the Secretary and the Administrator have requested and that thank-

fully were actually exceeded in the last two cycles of appropriations, we will start to turn that curve and actually reduce deferred maintenance. It will take a long time, two decades, unless there is a very significant increase in investment.

Mr. ROGERS. What do you consider a very significant increase in investment that would get that clip down to a decade earlier?

Mr. MCCONNELL. The history that we have that we can rely on is the 10 years where the Facilities and Infrastructure Reinvestment Program, FIRP, was in place. FIRP had at its higher points was between $200 million and $300 million a year, and that had a noticeable effect.

Mr. ROGERS. Okay. With that, I will recognize the ranking member for any questions he may have.

Mr. COOPER. Thank you, Mr. Chairman.

First, General Klotz, I apologize for your having to spend your birthday this way. If you check, it may be a violation of the Geneva Conventions for this to happen.

I couldn't help but notice in your testimony and in your statement the remarkable statement that if Congress comes through and provides $200 million this year to close down Bannister, that could save the government $500 million. Whoa. That is pretty amazing. We should do stuff like this all day long.

But I would ask you, and it may be more appropriate for the record, and maybe Mr. McConnell can pitch in here, I think the public would be very interested in knowing what causes a $300 million delta like that. Is the government that inefficient, or are these facilities so prehistoric or government regulations so cumbersome that just by turning it over to the private sector we can save this fantastic amount of money? That is significant.

[The information referred to can be found in the Appendix on page 87.]

Mr. COOPER. It would also be important to see if we could do this elsewhere as well, because this is what is sometimes called low-hanging fruit. Why not pluck this from the branches while it is available?

Mr. MCCONNELL. Sir, I would be happy to. The unique situation of the Bannister Federal Complex just inside the Kansas City beltway, it is very valuable from a redevelopment perspective. So when we can sell it to this private redeveloper, they can develop it purposefully for the next use, an industrial use. If we as the Federal Government have to D&D, deactivate and decommission the facility, we have to take it to standards that would be acceptable for any use, which is a cleaner, more intense level of remediation. And so that accounts for the significant price difference. The government's constraints are a little bit more rigid than the private sector would have.

Mr. COOPER. So we would have to make it, say, playground safe for children so they could eat the dirt if they wanted to?

Mr. MCCONNELL. Yes.

Mr. COOPER. And you are allowing it to be dirtier for an industrial use. So we save $300 million by letting it be more polluted.

Mr. MCCONNELL. Well, to getting it to a point where it still meets standards. It will still meet all the standards for its purpose. But since the developer will have a specific purpose and the gov-

ernment doesn't have any specific purpose when it is getting ready to clean it, it is a different standard. If we were to repurpose it for our own use, we would clean it up to the same standard as this private developer, but that is if we were planning to reuse it for an industrial activity.

Mr. COOPER. So government regulations require it to be retrofitted for any purpose, including the most stringent, the cleanest, and a private developer can just find a use for it that could be a landfill or something. It doesn't have to be that clean.

General KLOTZ. In our discussions with the developer, their actual use for it has not come up. That is part of their business model.

Mr. COOPER. I think it is interesting for people to understand what causes this incredible arbitrage, you could call it, between two types of developers.

Mr. MCCONNELL. That is the primary difference. There are probably others as well.

Mr. COOPER. Others, yes.

Anecdotally at least, I have come to the conclusion that Naval Reactors has done a better job of maintaining its facilities than the others. I don't want to pass final judgment on that, but it has led me to the thought that with the traditional non-naval military rotation, 2, 3 years in a job, move on, that makes it very tempting to leave maintenance problems to your successor. It is kind of built in the job because as you put it, first is the mission, the pointy end of the spear, then the personnel, and then if there is money left over, we maintain things.

But Naval Reactors and the whole Rickover tradition was you were there for the long haul, whether it is an 8-year tour now, it can be longer. That gives you a much different perspective than 2 or 3 years in, 2 or 3 years out sort of point of view.

So I am also wondering if in addition to the failure for Congress to appropriate money for maintenance in some sort of sinking fund or amortization or depreciation, that we have a structural issue in our military where you are not going to get anything else but ignoring maintenance when you are only there for 2 or 3 years. It is almost like the old joke about the envelope in the drawer for your successor. Why don't we figure out a plan at least for these ultrasensitive facilities that takes a longer-term perspective.

General Klotz.

General KLOTZ. Thank you very much for that comment. You raise a very interesting point. First of all, I am glad to hear you say that in your opinion Naval Reactors is doing well in this regard because, as you know, we have some responsibility for Naval Reactors. The director of Naval Reactors essentially wears two hats, one with the Navy and one with the Department of Energy, NNSA.

And they do have their challenges. I have visited most of their major facilities, their laboratories, and there are some buildings there which, quite frankly, date back to the early days of the Cold War, back to the early Rickover era, and are in need of replacement. In particular the spent fuel handling facility at Idaho where they have a large pool where they bring spent naval reactor fuel from aircraft carriers and submarines is starting to show some real

signs of age and needs to be recapitalized, and with the support of Congress we are on the track to do that.

But you raise a good question. In the military and among the political appointees, there is a turnover, and I think that speaks to the importance of making sure that—or what we have tried to do in NNSA and DOE over the last couple years is to make sure that we have clearly articulated, defined, and written down the roles, responsibilities, authorities, and accountability of the various activities that take place within the Department of Energy and within the NNSA and then to put in place career senior executives who are experienced and experts in this particular field so that as transitions take place they know what they need to do and they have the authorities and the game plan to actually carry those things out.

So we have worked very, very hard to make sure that is in place. It may not be as satisfactory as an 8-year term for the head of Naval Reactors or the head of the Navy's Strategic Systems Program who also has a longer fixed term, but it is how we have tried to address that particular issue.

Mr. MCCONNELL. If I may add one other aspect. One of the challenges that I have seen that has been faced is how to balance risk decisions between short-term programmatic needs and longer-term infrastructure risk. And one of the things that we have done recently in NNSA, over the course of the last 2 or 3 years, that has been very beneficial both in terms of that decision and how to carry this forward, is created a system that more objectively analyzes and communicates the risk that infrastructure poses to the mission, so that decisionmakers like Administrator Klotz and the Secretary have a better understanding now than perhaps their predecessors had of what the risk tradeoff actually is between the present and the future.

The future was always a little fuzzy, and so the decisions tended to favor shorter-term risk at the expense of infrastructure. We now have a better way of explaining to the Administrator what might happen if we either do or don't invest in infrastructure, and that allows for a better risk-informed decision which produces a slightly different balance. And I think that has resulted in some hard decisions that have actually gone to increase investment in infrastructure.

Mr. COOPER. To put this in a more understandable context for average citizens, we had a Treasury Secretary once who said that nobody in the history of the world has ever washed a rental car, because if you don't think like an owner, you don't care, you're not going to keep it clean. And anybody that has ever rented an apartment knows that if you don't keep it clean, you are going to lose your security deposit. And the landlord requires that security deposit because they want a Sword of Damocles hanging over your head as an incentive to turn it over clean.

So I wonder in the promotion boards if we are paying adequate attention to the state of the facilities that were under a command when the commander goes up for a promotion. If they leave it in worse shape than they found it, if it is a dump, if they didn't push through the Pentagon bureaucracy for more money to keep it up, then maybe that should be a black mark on their career. Because

otherwise it is just too easy, in and out 3 years, punch your ticket. Move on.

Thank you, Mr. Chairman. I think my time has expired.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentleman from California, Mr. Garamendi, for 5 minutes.

Mr. GARAMENDI. First, Mr. Chairman and Ranking Member, thank you for this really important hearing, which we probably don't spend enough time on overall in Congress on these kinds of things. And it really comes down to, and I am really pleased that you brought up this issue of succession and the like. When I was over at the Department of Interior some decades ago now, there were what we knew as the Weebees. I see Mr. McMillan knows what I am talking about. It is the "we be here when you are gone." And indeed that is part of the discussion we are having here.

I think that we also are responsible for making choices here, and in some respects we have not required the information that we need to make the choices, in part because we really have two different operations here. We have got the Department of Energy, and then we have got the rest of the military with the nuclear enterprises on the other side, and the budgets are split, the committees are split, and the responsibility is also.

But when taken in totality, the entire nuclear enterprise is really dependent upon what goes on here and in NNSA. But you don't have the fancy missiles or the stealth bombers and other kinds of things that are part of our responsibility. And so I think it is important for us to be fully aware of this particular issue of not deferred maintenance, but the ability of these facilities to function for the purpose of national defense. In other words, in this case the bombs themselves.

And so I need more information, and I would suspect that perhaps my colleagues do too. And if you could provide some of the information that apparently has been made available from the laboratories to NNSA, I would like to see at least a synopsis of that in the overall context and really how each of these facilities meet the essential, I want to emphasize that, the essential role of the totality of the nuclear security system.

General KLOTZ. Yes, sir, we would be more than happy to provide that.

[The information referred to can be found in the Appendix on page 87.]

Mr. GARAMENDI. That is a long conversation, and it is, frankly, a lot of hard work on at least my part to understand how all this fits together, and I will take the time to do that. Because one-off, okay, we need a new pit facility. Fine. How does that fit into the overall picture of this whole maintenance?

And I think that my colleague here is quite correct about the incentives in the system, and we be, we all be gone, or we won't. So I think that fits it.

I am going to let it go at that and look forward to additional information.

Okay. Thank you.

General KLOTZ. If I could, sir, I would like to publicly thank you for coming over to the Department of Energy and NNSA a few

weeks ago. A visit of a Member of Congress, as both Congressman Rogers and Congressman Cooper know, goes through an organization like wildfire, and it is really a boost to the morale of the people who do this work and don't often get a lot of recognition and appreciation and care for what they do. So thank you, sir, for that.

Mr. GARAMENDI. The visit was most informative, and I will come back whenever there is another opportunity to learn along the way. Thank you.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentleman from Colorado for 5 minutes.

Mr. LAMBORN. Thank you, Mr. Chairman. Thanks for having this hearing. I want to thank the witnesses for being here.

I don't have any specific question, but I just want to say that I have been to Los Alamos, and I have seen some of the buildings right on the fault line. And I have been to Pantex, and I have seen some of the decrepit conditions there. And I agree with you, some of the deferred maintenance really needs to be addressed. And I want to be supportive, working in a responsible and effective way, efficient way, to overcome these problems. So thanks for highlighting those and for being here today.

And, Mr. Chairman, that is all I have, and I yield back.

Mr. ROGERS. I thank the gentleman.

Mr. McConnell, can you describe for us some of the various approaches you have employed to deal with some of these infrastructure challenges? And in particular I am thinking about line item construction, public-private partnerships, FIRP-like programs, other approaches. Give us some idea about what is working, what is not working, and what you would like to do.

Mr. MCCONNELL. Thank you very much.

First and foremost, as I described a second ago, we start with a more objective analytical basis for identifying on an asset-by-asset, individual facility basis what each facility's contribution or a system's contribution to our mission is. Combining that with an appreciation of the condition of that facility, how likely it is to fail, we have the ability to assess risk on a facility-by-facility basis that gives us a rationale for prioritization of what infrastructure investments are required.

At a relatively high level then, we make a decision about the totality of the infrastructure investment that is appropriate at any given time. And then we get down to the nuts-and-bolts level of what is the specific system or facility or component that needs to be fixed and decide whether it is a maintenance-type activity or a replacement activity or if it is a major construction activity. And that is how we then bin into the various tools that we have at hand.

When it comes to major construction, when we have a large item that needs to be replaced, tens, hundreds of millions of dollars, there is a very rigorous process, as I am sure you are well aware, and one of the first steps in that is to do an analysis of alternatives. We figure out what all the ways we could satisfy the need are and then do an analysis of each alternative to figure out which one makes the best sense and the best value for the government.

We go into that, again, very objectively, data driven, without the preconceived notions, and then identify which alternative works best.

Two classic recent examples. In Amarillo, for the Pantex administrative support complex, we went through that analysis and determined that the public-private partnership route was the best option and the best value. We have for the Federal staff a need for a new facility in Albuquerque, New Mexico. We went through the same process. That time the answer that came back was normal traditional line item capital construction.

So we are driven by the data, we are driven by the results to pick the option that is best, and it is good to have all of those tools in our toolbox because then we can get pretty specific on how to optimize our resources and apply them to the best way.

Mr. ROGERS. Well, we have heard some examples today from Mr. Ricciardelli and Mr. Smith about successful public-private partnerships, and it is no secret I am a big proponent of public-private partnerships. And you all just had a real success, or you started a real success at Amarillo by taking on a portion of the deferred maintenance challenge at the Pantex complex with a public-private partnership.

Where else, is there another challenge on deferred maintenance that comes to mind where you think a public-private partnership would be the right approach?

Mr. MCCONNELL. As I said, in every time that we need to deal with acquiring a new capital asset, we look at all the aspects, and public-private partnership, third-party financing is always, unless there is some very unique situation, one of the alternatives that we——

Mr. ROGERS. But there hasn't been a project that you are facing where you have already done that analysis and you have decided if we had the money a public-private partnership would be the solution?

General KLOTZ. There are other areas that we are currently working through. I think when we came up and briefed you or had a hearing on third-party financing and public-private partnerships we mentioned Livermore, two facilities out there.

There are two laboratories at Livermore, Lawrence Livermore Laboratory and Sandia Livermore. They both have projects which are designed not so much to deal with deferred maintenance, although it will, but they are designed to get at another objective that the Congress has and that the DOE and NNSA has, and that is to create the opportunity for these labs, which are essentially engines of scientific technology and engineering innovation, to be able to work better with local industry and local universities and colleges in a collaborative space.

So at Livermore, again at both labs, we are pursuing buildings which would allow the scientists from the national laboratories there to mix with people from the outside to advance innovations in high-performance computing, for example. So to us that looks like a good candidate for a public-private partnership.

We have been working very, very closely between the headquarters and the two laboratories on this. They have been taking very,

very careful notes from our experience in getting the Pantex deal closed.

So we are still working the numbers to make sure that we can satisfy the requirements of the various OMB circulars, as well as the rules that have been put in place by the Congress and will be adjudicated by the Congressional Budget Office when it comes to scoring.

Mr. ROGERS. Thank you. I appreciate what you have been doing, and I want to pledge to you that I am going to do all I can to work with the ranking member to help convince our colleagues that we need to meet this challenge more aggressively because the risk to our nuclear enterprise is completely unacceptable at present.

With that, I will yield to the ranking member. Any closing remarks? Has none.

Gentleman from Colorado?

With that, I thank you very much for your service to our country, and this hearing is adjourned.

[Whereupon, at 5:47 p.m., the subcommittee was adjourned.]

A P P E N D I X

SEPTEMBER 7, 2016

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

SEPTEMBER 7, 2016

Opening Remarks – <u>As Prepared for Delivery</u>
The Honorable Mike Rogers
Chairman, Subcommittee on Strategic Forces
House Armed Services Committee

Hearing on "Deferred Maintenance in the Nuclear Security Enterprise: Safety and Mission Risk"

September 7, 2016

Good afternoon. The subcommittee will come to order.

Welcome to our hearing on "Deferred Maintenance in the Nuclear Security Enterprise: Safety and Mission Risks."

To kick off the hearing, I want to display a slide provided by NNSA that encapsulates the challenges they are dealing with.

The enterprise has a $3.7 billion backlog of deferred maintenance that has accumulated over decades. And this backlog is now actively threatening both NNSA's mission and the safety of its workers.

As this slide puts it so well: "Infrastructure risks become safety and program risks."

This slide also shows some of the very real impacts that infrastructure failures are having.

Ranking Member Cooper and I have seen much of this first-hand during our oversight visits to these facilities. Just a small list of the challenges we've seen includes:

- Tarps hung over sensitive diagnostic equipment, to prevent leaking roofs from destroying equipment worth tens of millions of dollars
- Chunks of concrete falling from ceilings into operational work spaces
- Tape and plastic sheeting around pipes carrying radioactive fluids
- Major hydraulic oil leaks
- Grass growing through floors

As this slide describes, many of these failures result directly in program delays and safety risks.

Our witnesses highlight this in their written statements. For instance, here is General Klotz:

- "Our infrastructure is extensive, complex, and, in many critical areas, several decades old. More than half of NNSA's approximately 6,000 real property assets are over 40 years old, and nearly 30 percent date back to the Manhattan Project era. Many of the enterprise's critical utility, safety, and support systems are failing at an increasing and unpredictable rate, which poses both programmatic and safety risk."

And here is Mr. Smith:

- "Many key facilities at both [Pantex and Y-12] were constructed in the 1940s and were intended to operate for as little as one decade. Many facilities and their supporting infrastructure have exceeded or far exceeded their expected life, and major systems within the facilities are beginning to fail."

And finally, Dr. McMillan:

- "One of the things that keeps me up at night is the realization that essential capabilities are held at risk by the possibility of such failures; in many cases, our enterprise has a single point of failure."

Of course, these infrastructure challenges directly impact NNSA's readiness to respond to new direction and military requirements.

Broader defense readiness challenges have been a focus this year of the HASC—and readiness and responsiveness within NNSA has been a focus of this subcommittee for years.

We must ensure not only the people and tools within NNSA are ready to respond, but also the infrastructure.

On the readiness of people and tools front, this committee has continued to advocate the Stockpile Responsiveness Program mandated by last year's NDAA.

On the infrastructure front, we continue to authorize substantial increases to NNSA's infrastructure accounts.

But I believe more must be done. We need to be looking to do more—including both tried-and-true solutions that have worked in the past, as well as new, innovative solutions.

For instance, the Facilities and Infrastructure Recapitalization Program (FIRP) was a ten-year, $2 billion effort that started in 2002 and was successful in addressing many deferred maintenance challenges.

But in the end it accomplished only a portion of the work that ultimately needs done. I think we should be looking at a new FIRP-like program for the future.

We should also recognize the success of recent public-private-partnerships in addressing these challenges in innovative ways.

The result out at Kansas City in particular is an indication of what we can do if we work together and use these kinds of creative approaches.

I want to thank our witnesses for being here today. You represent and lead many of the workers within our nation's nuclear enterprise. We know how hard you and they work, and we are grateful to all of you.

Our first panel of witnesses includes:

- **Dr. Charlie McMillan**
  - Laboratory Director
  - Los Alamos National Laboratory

- **Mr. John (J.R.) Ricciardelli**
  - President
  - Honeywell Federal Manufacturing & Technologies, LLC

- **Mr. Morgan Smith**
  - President and Chief Executive Officer
  - Consolidated Nuclear Security, LLC

Following these gentlemen will be our second panel of witnesses, who I'll also briefly identify here:

- **The Honorable Frank Klotz**
  - Administrator
  - National Nuclear Security Administration

- **Mr. James McConnell**
  - Associate Administrator for Safety, Infrastructure, and Operations
  - National Nuclear Security Administration

Thanks again to you all for being here.

Finally, I want to highlight the important work being done by the witnesses from both our panels. Under the leadership and direction of Secretary of Energy Moniz and General Klotz, you all have put a halt to the growth of deferred maintenance.

You recognize that these challenges have a direct impact on your workers' morale, performance, and safety—and I know you are working hard to deliver for them.

This subcommittee stands by to assist and support you—because we recognize how much more needs to be done.

Disrepair in the Nuclear Enterprise: Safety and Mission Risks
Opening Statement
Ranking Member Cooper
September 7, 2016 - 3:30pm

I join Chairman Rogers in welcoming our witnesses today to this hearing on disrepair in the nuclear enterprise.

Timely maintenance of the U.S. nuclear complex is essential for a robust nuclear capability. Maintenance has been too often deferred, as National Nuclear Security Administration (NNSA) and its contractors focus on designing and planning new nuclear weapons such as the Interoperable Warhead, extending the life of current nuclear weapons, or building new billion-dollar nuclear facilities. But maintenance cannot be ignored or delayed. The safety of our nuclear personnel and the effectiveness of our weapons depend on well-maintained nuclear facilities.

We have visited many of these sites and seen the deplorable conditions of some of these old facilities. We have seen collapsing ceilings, leaky pipes, cracked or flooded floors and worse.

My question is how we have reached such a state of disrepair, and in some cases, extreme dilapidation. Despite unprecedented investment in the nuclear complex, NNSA is not conducting enough timely maintenance and recapitalization to ensure that existing facilities, some of which are over half-a-century old, are able to meet mission needs. I am not faulting General Klotz but for many years NNSA has not succeeded in keeping our nuclear facilities up-to-date. Congress is partly to blame for the low priority and meager funding given to facility maintenance.

We know that nuclear maintenance can be done responsibly. We have the example of Naval Reactors whose facilities are not falling down. Effective planning and oversight have ensured that Naval Reactors problems are detected and addressed early. Sufficient investments in routine maintenance contribute to a safe working environment at Naval Reactors' facilities. This is not the case for NNSA facilities.

I share the Chairman's concerns about the need to maintain these vital NNSA facilities, and I remain concerned that the plan in place to remedy this unacceptable situation is insufficient.

Finally, the right-sizing of NNSA facilities is also important. We should not maintain buildings that are no longer needed. Increased funding and attention must also benefit the Environmental Management program which is responsible for decommissioning and demolishing unnecessary and non-operational facilities.

Thank you for the opportunity to discuss these issues today.

Statement of Morgan Smith, President and CEO

Consolidated Nuclear Security, LLC

on

"Deferred Maintenance in the Nuclear Security Enterprise: Safety and Mission Risks"

Before the

Subcommittee on Strategic Forces

House Committee on Armed Services

Sept. 7, 2016

Chairman Rogers, Ranking Member Cooper, Members of the Subcommittee, thank you for the opportunity to submit this statement on the deferred maintenance challenges facing the National Nuclear Security Administration (NNSA), the nuclear security enterprise, and in particular, the specific challenges facing the Pantex Plant in Amarillo, Texas, and the Y-12 National Security Complex in Oak Ridge, Tennessee. Consolidated Nuclear Security, LLC (CNS) is very appreciative of the support the House Armed Services Committee has given the sites over the years as well as your support of several new projects that will improve conditions at both Pantex and Y-12.

CNS is the management and operating contractor for the NNSA's two primary nuclear production sites: the Pantex Plant and the Y-12 National Security Complex. CNS assumed the management and operating responsibility for the sites on July 1, 2014. Pantex is our nation's only nuclear weapons assembly/disassembly facility. Y-12 is our nation's only nuclear weapons secondary facility. Without the essential work performed at Pantex and Y-12, our Nation's ability to maintain the nuclear deterrent will not happen. The quiet, but important work done in these two facilities is essential to our nation and our allies and it is a privilege to work alongside the patriots that comprise the federal and contractor workforces in support of our important mission. It is also a privilege to engage with our host communities as we work together to improve both the sites and the surrounding areas.

Both sites have long and storied histories of contributing to the nation's nuclear deterrent. The Pantex Plant produced conventional bombs and artillery shells when it was established during World War II, but was recast in the 1950s as a main hub for the assembly of thousands of nuclear warheads. Since 1975 Pantex has been the nation's primary assembly, disassembly, retrofit, surveillance, and modification center for nuclear weapons. It also produces the chemical high explosives used in nuclear weapons, assembles and maintains nuclear weapons, dismantles weapons that are retired from the stockpile, and serves as the interim storage location for plutonium components that have been removed from dismantled nuclear weapons.

Y-12 was established as one of three Manhattan Project sites and produced the enriched uranium that fueled the Little Boy atomic bomb that contributed to the rapid conclusion of World War II. As the Cold War grew, Y-12 served as a key cog in the nation's nuclear deterrent, and today it remains an essential component in the nuclear security enterprise. Its missions include manufacturing, dismantlement and surveillance of highly enriched uranium components, and serving as the country's primary safe and secure storehouse of highly enriched uranium. Y-12 also supplies the enriched uranium feedstock that is

fabricated into fuel for Nuclear Navy propulsion use. With our vast uranium expertise we play a major role in efforts to secure vulnerable nuclear material around the world and curb nuclear trafficking and smuggling.

Both sites have performed their essential missions and evolved their roles in support of our nation since their inception, however, they have not been immune from the effects of time, similar to other infrastructure across the country. Many key facilities at both sites were constructed in the 1940s and were intended to operate for as little as one decade. Many facilities and their supporting infrastructure have exceeded or far exceeded their expected life, and major systems within the facilities are beginning to fail. Sustaining these facilities while continuing to produce mission deliverables in a work environment that enables attracting and retaining the needed world class workforce is a considerable challenge, as is adequately capturing and allocating deferred maintenance and replacement funding. Our dedicated employees diligently plan and work to maintain a safe and secure working environment and production capabilities, but the effort necessary to sustain our capabilities continues to grow. A better overall long term approach is required.

Between Pantex and Y-12, CNS has approximately $800 million in deferred maintenance currently on its books. Approximately $175 million of that deferred maintenance is for mission critical facilities. Under the direction of Energy Secretary Ernest Moniz and NNSA Administrator Frank Klotz, there has been a push to arrest the growth of deferred maintenance across the nuclear security enterprise, but significant investment is required to appreciably reduce that backlog and sustain safe operations for the extended life of these vital mission facilities. Furthermore, while we will always work to maintain safe and secure conditions, the considerable effort to do so naturally impacts our ability to maximize our delivery of the mission.

Throughout my career, I have made decisions based on two fundamentals: what is right for the nation, and what is right for the people? By answering these questions I have found that priorities are more clearly identified, and that the right decisions are made for the right reasons. Deferred maintenance, however, provides a profound challenge in achieving the proper balance, especially in light of the need for enduring capability at the sites to produce that which is needed for the country while providing proper conditions for employees.

The primary concern with knowingly deferring maintenance is that a major, unforeseen failure could occur. Our top non-negotiables—we call them our imperatives—are safety and security. We will protect our people, our communities, the materials we are entrusted with, and the environment in which we and our friends, neighbors, and communities live. We cannot, and will not, compromise safety and security. Our nation, however, also relies on us to deliver our mission with the highest quality products and services. Keeping our facilities and working conditions safe, secure, and operating properly requires ever-increasing operations and maintenance funding because the potential disruption to operations and mission deliverables is a real concern, as is the likelihood for a substantial increase in costly repairs.

This degradation hasn't gone unnoticed. Our workers experience it every day and are vigilant in their efforts to perform to the highest standards while often working in facilities that are less than ideal and are the subject of frequent repairs and outages. Furthermore, many of our workers have had life-long careers at the sites and for them, keeping the sites going is truly a service to the nation with a knowledge of the past difference these sites have made. Attracting and retaining the next generation of

great workers becomes more challenging in facilities that are in a deteriorated state. Congress and the NNSA are well aware of the challenges, and so is the media.

A 2012 Washington Post article described Building 9212, the main hub of our production activities at Y-12, as the "most pressing example of neglect and deterioration" across the nuclear security enterprise, describing a building made of "clay tile and cinder blocks" that "looks its age" with "large patches of rust and corrosion on interior walls" and a roof that leaks when it rains. The new Uranium Processing Facility scheduled for completion in 2025 will replace 9212, but until then 9212 must remain operational.

"For two decades, U.S. administrations have confronted the decrepit, neglected state of the aging nuclear weapons complex. Yet officials have repeatedly put off sinking huge sums into projects that receive little public recognition, driving up the costs even further," the Post wrote.

After a tour of Pantex last year, Rep. Mac Thornberry, the chairman of the House Armed Services Committee and our Congressman at Pantex, wrote in a letter to Energy Secretary Ernest Moniz that he continued to be "struck by the deplorable state of its infrastructure and facilities." A more recent tour by another group involved an encounter with a snake, which can be a periodic occurrence in some of the site's older buildings.

Earlier this summer, the Amarillo Globe-News noted that many Pantex buildings have outdated electrical systems and leaky roofs, with employees resorting to putting tarps over high explosives testing equipment to protect it during storms.

And recent press coverage described continued concrete deterioration in the ceiling of Y-12's 9204-2 facility that has posed a safety risk while significantly increasing the cost for necessary replacement of dehumidifying equipment mounted on the floor above the ceiling. As a result of severe concrete spalling and reinforcing bar degradation, load limits have been established by our engineers that only allow two people in the area above the spalled structure at one time. Other similarly-aged facilities are being evaluated for similar conditions.

Unfortunately, failing infrastructure and problems that arise from deferred maintenance occur on their own timetables and can adversely affect production and safety, even with preventative measures. In recent years, utilities failures, steam and plant air outages, potable water interruptions, and high-pressure fire loop lead-in failures have all caused production stoppages, which has created additional significant pressure on mission delivery efforts.

For instance, unplanned outages to humidity control equipment earlier this year immediately shut down production in Building 9204-2. Process failures (such as fan or pump motor failures) happen on an average of about once a year, which can result in outages up to one week. This is compounded by the fact that there is no excess capacity for humidity control equipment.

The electrical distribution systems at both sites are also experiencing age-related failures. For example, underground electrical connectors have exceeded their design lives and are beginning to fail. When these do fail, power interruptions to mission-critical and mission-dependent facilities impact production activities.

The failed condition of approximately 600 utility poles at Y-12 create a significant risk to site electrical and communications distribution systems. Current funding levels do not allow full replacements, and a major wind or storm event presents the risk of power and communication interruptions.

The High-Pressure Fire Loop lead-ins at Pantex also suffer from age-related corrosion and exhibit multiple failures each year. There is an effort to replace all affected portions over the next decade; however, the failures are occurring at random locations which directly impact bays and cells, and mission work cannot be supported until the leak is fixed, which can take several months to accomplish.

While the conditions are difficult and we are unable to turn back time, it is important to note that we are not sitting idly by and allowing our systems to age into obsolescence. At Pantex and Y-12 we have charted a clear path to address infrastructure and deferred maintenance concerns and position both sites to continue to serve as essential cogs in the nation's nuclear deterrent for decades to come.

From 2002 to 2012, the Facilities and Infrastructure Recapitalization Program, known as FIRP, eliminated $141 million in deferred maintenance at Pantex and $198 million in deferred maintenance at Y-12.

Since 2003, the demolition of excess facilities has eliminated $16 million in deferred maintenance at Pantex and $76 million at Y-12. At Y-12, we're continuing to partner with the DOE's Office of Environmental Management on plans to prepare additional buildings for their eventual demolition.

Of note are the Alpha 5 and Beta 4, which are shut down, and 9206, which is still a Category 2 Nuclear Facility with only a deinventory mission left to fulfill. These facilities are no longer used in production, sit adjacent to active production areas and would present a significant risk to mission activities if the buildings were to further deteriorate. Eventually the facilities will be turned over to the Office of Environmental Management for demolition, but until that time we must keep them in a safe and stable configuration.

Through additional funding provided for this fiscal year, the Alpha 5, Beta 4 and 9206 facilities are being fitted with new spray-foam roofs that will protect the facilities and the environment by mitigating leaks, sealing penetrations, and slowing the roofs' deterioration. To appreciate the scale of this effort, the area of the three roofs combined is 280,000 square feet (more than 5 football fields).

In addition, tanks and dikes outside of Alpha 5 and Beta 4 are being disconnected, drained, and filled with concrete. Beta 4 will also have its Manhattan Project-era electrical system replaced by a temporary "construction power" setup that will provide as-needed electricity to the building in a manner that is safer, more reliable, and will allow for simpler demolition activities in the future. Water that has flooded the basement of Alpha 5 is being evaluated for eventual removal and treatment.

Along with eliminating excess and deteriorating facilities, we are also embarking on the largest set of capital construction projects for both sites in decades. At Y-12, the Uranium Processing Facility is moving forward. When completed, it will provide modern, safe, and secure facilities for processing uranium—activities that are currently conducted in facilities that are over 70 years old—and will help eliminate $28 million in deferred maintenance in helping us move operations out of the 9212 facility, but sustainment activities will be necessary over the next 10 to 15 years in order to accommodate the transition to UPF.

We are also working through readiness activities of the High Explosives Pressing Facility at Pantex, and we are in the planning stages for a new High Explosives Science and Engineering facility at Pantex and a new lithium production facility at Y-12.

Also at Pantex, we recently received the go-ahead for a new privately financed and constructed Administrative Support Complex. Construction began recently and will take approximately two years. The 343,000-square foot facility will include general office space for 1,100 employees, a conference center, cafeteria, visitor's center, and medical and wellness facilities. It will also eliminate $20 million in deferred maintenance while greatly improving the quality of work life for federal and contractor employees.

Similar administrative facilities were built at Y-12 over the last decade. The Jack Case Center was built in 2007 and at 400,000 square feet, it houses approximately 1,500 employees and replaced numerous aged facilities that were not designed nor intended for office space. The New Hope Center was completed in 2007 and has five laboratories as well as 16 conference rooms, an auditorium and Y-12's history center. Additionally, the Highly Enriched Uranium Materials Facility began operations in 2010 and serves as the nation's premier storehouse for highly enriched uranium.

Smaller projects also make a big difference. At Y-12, Energy Savings Performance contracts have helped buy down deferred maintenance by $14 million. Currently, there are five main projects at different stages of progress, including the chiller plant upgrade, steam system decentralization, lighting upgrades, a new compressed air facility, and steam system repairs. The upfront capital for these projects is funded by a subcontractor, which is paid through the savings; however, Y-12 is responsible for support costs, including activities such as lock out/tag out, utility surveys and engineering drawing review. At Pantex, the third-party financed wind farm produces about 60 percent of the plant's electricity in the form of clean energy.

Other ongoing initiatives that will help reduce deferred maintenance include efforts to replace the high pressure fire loop lead-ins at Pantex ($18 million), production facility modernizations at Pantex ($7 million), the Nuclear Facilities Electrical Modernization project ($10 million), and HVAC replacements for both sites ($12 million).

While recapitalization is a priority, preserving our currently operating facilities is not taking a backseat. Strategic plant outages, a best practice at Pantex designed to help address maintenance issues, have also recently been adopted at Y-12. A recent three-day full plant outage at Y-12 allowed workers to address deferred maintenance on power, steam and air systems, giving a small army of Y-12 infrastructure, facilities, and utilities workers time to make repairs and perform preventative maintenance that will help avert unexpected outages and costly damage to equipment in the future.

The outage approach isolates entire systems at a time and addresses all possible corrective and preventive maintenance issues before returning the system to operation, allowing us to make sure our systems are healthy and safe and gives us less down time due to failures. This approach has been successful thus far and it will be necessary to continue this effort to address the backlog of deferred maintenance.

Y-12 is also developing an Extended Life Program, or ELP, for Buildings 9215 and 9204-2E, two key processing facilities. These two facilities along with the plant laboratory, 9995, will house all enriched

uranium material processing activities not incorporated into the Uranium Processing Facility design, and they will be expected to work in tandem with the new Uranium Processing Facility to meet the future needs of the country. The Extended Life Program will reduce material at risk in the facilities to lessen the consequences of any potential accidents, replace or refurbish key facility infrastructure and process equipment, and address and update regulatory requirements for extending the lives of the facilities. We have engineers monitoring these facilities closely, and support of the Extended Life Program will require additional funding over a number of years to ensure safe mission capabilities are sustained in these vital extended life nuclear facilities.

The Y-12 infrastructure and support facilities that sustain not only 9215 and 9204-2E, but the entire plant, are generally beyond design life, with a significant portion of electrical equipment that is no longer manufactured and process equipment also beyond design life and in need of upgrade/refurbishment. Fire water distribution systems, humidity control equipment, steam and condensate return distribution systems, cooling towers, and facility structural conditions are also significant risks to the health of the plant.

Planning is also underway for a Material Staging Facility at Pantex that would relocate existing high security nuclear weapons and nuclear weapons component storage and staging areas in Zone 4. The current facilities in Zone 4 are between 45 and 65 years old, and a Material Staging Facility located in Pantex's production area would help replace those facilities as well as reduce the size of Pantex's aging Perimeter Intrusion Detection and Assessment System, or PIDAS, and eliminate the need to transport weapons and weapons components between two areas at the plant.

Along with Lawrence Livermore National Laboratory, Pantex and Y-12 have piloted a software program for the NNSA designed to better track and manage building infrastructure maintenance. The sites were designated as BUILDER Centers of Excellence in 2013 by NNSA and are in the process of implementing the U.S. Army Corps of Engineers' BUILDER Sustainment Management System. The program is designed to let managers proactively respond to infrastructure maintenance needs, and when complete, Pantex's 620 facilities and Y-12's 345 buildings will be integrated in the program.

CNS remains committed to helping maintain the nation's nuclear deterrent and providing a safe and secure workplace for the thousands of dedicated men and women who come to work every day at Pantex and Y-12. With many new projects at both sites on the horizon and significant efforts to modernize and maintain the sites underway, the future is bright. The federal and contractor teams at our sites are up to the challenge that is laid before us, but significant reductions in deferred maintenance will not be realized without continued investment strategies. Similar to a FIRP Program, a significant additional annual investment above current funding levels would be required to reduce deferred maintenance at both sites. Until this is done, there will be periodic disruptions to mission accomplishment while unplanned emergent items are dealt with and impacts on production are subsequently addressed through recovery schedules and worker overtime whenever possible. Current funding levels presently allow us in many areas only to treat the symptoms of age rather than address the fundamental degradation.

A robust recapitalization program that includes funding for new construction projects and the disposition of excess facilities will complement continued enhanced efforts to address existing deferred maintenance issues, and each are essential actions that need to be taken to preserve the mission work

that occurs at both sites, ensure the continued safety of our workforce, and help keep Pantex and Y-12 on track to provide a safe, secure and effective nuclear deterrent into the future.

Thank you for the opportunity to speak to you today.

Morgan Smith

Morgan Smith is the president and the chief executive officer of Consolidated Nuclear Security, LLC, which is responsible for the management and operation of the Pantex Plant in Amarillo, Texas, and the Y-12 National Security Complex in Oak Ridge, Tennessee. A Bechtel executive, Smith joined CNS in 2014 to serve as the CNS chief operating officer and manage the operations of both sites.

Smith has more than 36 years of prior technical and managerial leadership experience within the Naval Nuclear Propulsion Program. He performed significant roles in planning and implementing the consolidation of the Bettis Atomic Power Laboratory and Knolls Atomic Power Laboratory into a single organization and, in 2014, applied that experience to initiate the consolidation of Pantex and Y-12 under one U.S. Department of Energy contract.

As general manager of Knolls Atomic Power Laboratory from 2009 through June 2014, Smith had direct management of that laboratory and co-managed the Bechtel Marine Propulsion Corporation in partnership with the general manager of the Bettis Atomic Power Laboratory. He and his co-manager led approximately 7,000 employees—who performed nearly $2 billion of work annually at five sites for the Naval Nuclear Propulsion Program—under a joint contract with DOE and the Navy.

Smith also served as president of Bechtel Bettis, Inc., and as general manager of Bettis Atomic Power Laboratory. He managed contracts with DOE and the Navy that had combined revenues of more than $600 million and approximately 3,500 employees at three main sites and eight major field offices. He also managed and oversaw resources for new reactor and propulsion plant design, component design and testing, materials development and testing, technical support for procurement of all Navy reactor cores, placement of spent fuel into dry storage, and new ship construction and operating fleet support.

As president and general manager of Bechtel Plant Machinery, Inc., Smith managed approximately 900 employees at multiple sites with an annual operating budget of $110 million and annual subcontracts averaging approximately $600 million.

Smith's career has been focused on leading disciplined nuclear operations and improving performance in high- risk environments. His technical background includes design; development; and fabrication of reactor control drive mechanisms, steam generators and refueling equipment.

Smith holds a B.S. in civil engineering from The Pennsylvania State University and has completed various project management and leadership development programs with Westinghouse, Bechtel and the University of Michigan.

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COMMITTEE ON ARMED SERVICES
U.S. HOUSE OF REPRESENTATIVES

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Witness name: Morgan Smith

Capacity in which appearing: (check one)

○ Individual

◉ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Consolidated Nuclear Security, LLC

Federal Contract or Grant Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) or grants (including subgrants) with the federal government, please provide the following information:

2015

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
DE-NA0001942	Dept. of Energy/NNSA	$1,528,842,273.81	Management and operation of Pantex Site and Y-12 National Security Complex

2014

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
DE-NA0001942	Dept. of Energy/NNSA	$1,767,257,413.31	Management and operation of Pantex Site and Y-12 National Security Complex

2013

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant

Foreign Government Contract or Payment Information: If you or the entity you represent before the Committee on Armed Services has contracts or payments originating from a foreign government, please provide the following information:

2015

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

2014

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

2013

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

Testimony of Dr. Charles F. McMillan
Laboratory Director
Los Alamos National Laboratory
Before the
House Armed Services Committee
Subcommittee on Strategic Forces
September 7, 2016

Chairman Rogers, Ranking Member Cooper, and members of the Subcommittee, thank you for inviting me to testify today. I am Dr. Charles McMillan, Director of Los Alamos National Laboratory. I am pleased to have the opportunity to discuss with the Subcommittee the status of the nation's nuclear weapons infrastructure.

The United States recently celebrated the 20-year anniversary of Stockpile Stewardship. The Stockpile Stewardship Program (SSP) has so far allowed the National Nuclear Security Administration's (NNSA) national security science laboratories to certify that our stockpile is safe, secure, and effective without a return to underground nuclear testing. This endeavor would not have been successful without the strong support for significant investments in infrastructure—both scientific and manufacturing—from this Subcommittee, Congress in general, and past and present Administrations. The SSP required construction of new supercomputers and experimental facilities such as the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), the National Ignition Facility (NIF), and the Microsystems and Engineering Sciences Applications facility (MESA). These investments have helped the United States assure its allies and deter its adversaries by enabling successful certification of the nuclear stockpile.

As I have mentioned in past appearances before Congress, infrastructure is the backbone upon which this country's nuclear weapons enterprise is built. Many of the key elements of today's nuclear weapons mission infrastructure were designed and constructed during the Cold War. In a letter to Senate Armed Services on April 10, 2015, I stated that if our nation wishes to maintain its current leadership role in a rapidly changing world, investments in facilities and infrastructure must continue. I understand that nuclear weapons policy makers here are actively trying to maintain our nuclear capability against a strategic backdrop where many other nations are pursuing nuclear weapons modernization efforts.

Over the years, the NNSA, its laboratories, and production plants have been able to successfully execute upgrades to many of our existing facilities. Our track record, however, of building large replacement facilities has been challenging. Construction of large "Big Box," high-hazard, high-security nuclear facilities has become an extremely expensive and protracted proposition during the last 25 years. For example, Los Alamos has been trying to replace the mission capabilities of the 64-year-old Chemistry and Metallurgy Research (CMR) facility since the late 1980s. We are making some progress, but challenges remain. The last high-hazard plutonium processing facility, the Los Alamos Plutonium Processing Facility (PF-4), that was successfully brought online was constructed 38 years ago.

As a result of our difficulties in bringing new facilities online in a timely manner, we must continue to operate existing facilities longer than anticipated, while continuing to maintain these old facilities in a way that does not place our workers, the public, or our mission at unacceptable risk. This challenge is amplified as stockpile modernization efforts increase and budget and regulatory pressures mount. The laboratories and plants are regularly evaluating their infrastructure to balance current and future needs.

Because infrastructure funding is finite, I believe it is imperative that upgrades be undertaken with a very sharp focus on economically meeting mission need. Nuclear and radiological infrastructure by definition is going to be very expensive to design, construct, and maintain. Our job is not only to help the Government build what it needs to advance the mission, but also to provide the flexible space that can evolve with mission requirements. This can help reduce future costs for infrastructure maintenance and ultimately disposition.

In this testimony, I am going to talk about where we have been, where we are today, and where I believe we need to go with the infrastructure of our nation's nuclear enterprise.

Where we have been:
The facilities in our nuclear weapons enterprise can be binned into four categories based on hazards:

- Nuclear materials,
- Explosives and components,
- R&D/computing, and
- Light laboratory and office space.

Each category is a part of the system architecture that supports the national security missions of the laboratories and plants as well as the people required to successfully accomplish those missions.

Past facilities were often quickly acquired in the Cold War era, when funding was less constrained and the regulatory environment was less complex, resulting in relatively rapid acquisitions of facilities. The emphasis at the time was on the utility of the infrastructure being acquired and, as a consequence, many of these facilities now have difficulty meeting today's safety and security standards without frequent and expensive upgrades. Over the years, we have been able to use significant recapitalization funding to bring some of these facilities closer to current safety and security standards. Despite these investments, some of these same facilities are nearing the end of their useful lifespans; it will become more expensive to maintain and upgrade them rather than replace them.

It's important to note that the past now includes the very successful implementation of the tools of SSP. These technologically complex, one-of-a-kind facilities were not easy to bring online and, as the Subcommittee knows, they experienced challenges along the way. As an overall enterprise, we have seen successes: DARHT, NIF, MESA, and the subcritical

experiments at U1a. These tools and experiments have become integral to SSP, and the stewardship program has advanced substantially as a result of these capabilities.

Where we are today:
We have made progress on modernizing the infrastructure around the NNSA Enterprise. Modernization activities have commenced, based on the strong funding support from both the Congress and the Administration, in the areas of plutonium science and manufacturing, uranium science and manufacturing, supercomputing, and waste management. Each of these areas is key to ensuring the safety, reliability, and effectiveness of our nuclear deterrent.

Specific examples of modernization successes at Los Alamos include progress on our Plutonium Strategy—which entails further utilization of existing facilities, and designing smaller, incremental facilities to handle our required Plutonium operations—and in the areas of supercomputing and our production mission. I will address these areas below.

The Plutonium Strategy is an informative example, as it traces the evolution of thinking in recent years toward facility acquisition. This evolution started when the Laboratory faced a need to replace our aging Chemistry and Metallurgy Research (CMR) facility, originally constructed in 1952. The CMR facility provides capabilities to meet the high volume of analytical chemistry and materials characterization necessary to support plutonium-related missions, including pit manufacturing. The current CMR facility is scheduled to cease programmatic operations in 2019 due to age, programmatic limitations, and seismic issues.

As this Subcommittee knows well, the Congress and NNSA had initially planned to execute the CMR Replacement (CMRR) as a "Big-Box" facility. CMRR originally included the Nuclear Facility (NF), a Radiological Laboratory Utility Office Building (RLUOB), and equipment to outfit the facilities that could meet all the needs of the Enterprise. In 2012, the CMR Replacement Nuclear Facility (CMRR-NF) was deferred after the RLUOB structure was completed. The length of time it took to get the NF from planning to design, numerous changes to mission-space requirements, and continual increases to safety and security requirements drove significant, and ultimately unattainable, cost increases that resulted in a completely different approach to providing the required mission capabilities.

Realizing that attempts to put all necessary capabilities under one roof would have created a difficult path to success, Los Alamos staff and our NNSA partners developed a new strategy to phase in capabilities and adopted a modular approach to acquiring new infrastructure. The benefit to this approach is that it brings on capabilities closer to the time when they are needed. This modular approach also attempts to keep budget profiles reasonable and somewhat predictable. Consequently, a similar strategy is now being employed at other sites around the Enterprise.

That different approach is what we refer to today as the Plutonium Strategy. In the years since it was first proposed, we have made progress toward:

- Further outfitting the new RLUOB (Phase 1)
- Repurposing parts of the TA-55 Plutonium Facility with capabilities that we cannot put in the Radiological Laboratory (Phase 2)
- We have also started very early planning on modules that will connect our Plutonium infrastructure together and provide for extended life for the 38-year-old PF-4 Facility (Phase 3)

Although concerns remain around the future funding for elements of the Plutonium manufacturing capability, we are optimistic that continued engagement with NNSA and the Congress will deliver long-term solutions.

I also want to specifically mention some good news as it relates to our Plutonium capability. I am very pleased to report that we have successfully restarted more than 95% of all operations in PF-4 and completed the first pit production development unit in more than three years. Additionally, NNSA and Los Alamos have had early successes on the Plutonium Strategy by expediting and efficiently executing projects through effective application of provisions in DOE Order 413.3. These NNSA Critical Decision approvals allow for undertaking long-lead procurements and preparatory construction work early on in order to benefit the overall cost and schedule. Some of these successes stem from the lessons learned in getting the RLUOB operational from a cost, schedule, construction, and commissioning standpoint. I am also proud of this project because it is now a large-scale operating radiological facility that provides a demonstration test bed for how to scale up to our next high-hazard nuclear facility project.

We have also had success in reducing the overall footprint of legacy facilities. In particular, we are nearing completion on the demolition of two Cold War-era nuclear materials bunkers.

Supercomputing, which plays a large role in the annual nuclear weapons certification process, is another critical area for the Enterprise where we have made progress. Procuring, installing, and operating both capability and capacity supercomputing systems has been, and continues to be, a real positive in our infrastructure upgrading process. NNSA and the DOE Office of Science, I believe, have emerged as world leaders in bringing these complex machines online in a timely and cost-effective manner.

Because so much of the stockpile responsibility resides with Los Alamos, it is vitally important that our weapons designers have priority access to world-class capability and capacity supercomputing to continue assessment of our aging weapons systems and our life-extended weapons that are returning to active deployment. I would like to note the important partnership we have formed with Sandia National Laboratories to jointly develop the supercomputer assets at Los Alamos. This combined expertise is a solid

collaborative example of bringing two world leaders in supercomputing together for the benefit of national security.

We also have seen success at Los Alamos in NNSA efforts to recapitalize our production capabilities in Radioisotope Thermoelectric Generators (RTGs) and detonators. The RTG Assembly and Test Facility (RTG-ATF) re-established the capability to manufacture defense-related Radioisotope Thermoelectric Generators (RTGs), which had been lost since the closure of the Pinellas Plant in Florida. The RTG-ATF is a positive model for how facility re-purposing and new program design can be accomplished quickly and effectively. For approximately $22M total project cost, LANL re-established the capability to manufacture RTGs and produced its first RTGs using Pu238 heat sources in July 2015, twelve months ahead of schedule.

Los Alamos is the NNSA's production agency for Detonator Cable Assembly (DCA) manufacturing and surveillance. The DCA production requirements increased significantly in FY15 and are planned to increase fourfold through 2021. NNSA provided approximately $12M in additional defense programs funding in FY15, which LANL invested in facilities, process equipment, and technology upgrades. This investment is paying off: the latest production lot for the W76 LEP DCA saw a doubling of yield rates, a 50% reduction in total cycle time, and zero ergonomic injuries when compared to the previous production run.

Along with the successes noted above, there have also been continuing challenges. Construction of specialty nuclear facilities is not getting any easier from the standpoint of estimating, scheduling, project management, and actual work execution. LANL has recently realized issues with our TA-55 Reinvestment Project Phase II (TRP II) that may impact our project completion deadlines. LANL is currently working closely with the government and its parent companies to identify resources to move forward with a timely recovery plan for this project.

In addition to TRP-II, Los Alamos is also in the midst of a number of other line item construction projects, many of which are focused on waste handling. Though not necessarily glamorous, radioactive material and waste handling and processing require an effective support infrastructure, which is also expensive to build and maintain, but is vital to overall mission operations. We are diligently working to complete facilities focused on transuranic waste processing, and transuranic and low-level radioactive liquid waste handling.

Although I am pleased to report on our many successes, it is true at Los Alamos and across the NNSA Enterprise that many of the stewards of our stockpile continue to operate in buildings that are coming to the end of their useful lifespans. Each year that we continue to operate them, we either add to the list of deferred maintenance or are required to invest significant dollars into maintenance and upgrades. Despite maintenance, some of these facilities will inevitably become obsolete and fail. To use an imperfect analogy, these buildings are like older vehicles—though we continue to invest in repairs and maintenance, at some point the risk of failure will outweigh the economics and wisdom of such noble efforts. One of the things that keeps me up at night is the realization that essential

capabilities are held at risk by the possibility of such failures; in many cases, our enterprise has a single point of failure.

When we think about modernizing our nuclear weapons infrastructure, we predominantly focus on large projects like CMRR, the Uranium Processing Facility (UPF), or the new Kansas City Plant. It is sometimes forgotten that we will need to replace many other lower-profile but essential facilities that date back nearly to the Cold-War era. As I stated in a letter to Senate Armed Services Committee earlier this year, our nation has critical needs to replace aging facilities where we do research, development, and testing of high explosives (HE). These HE facilities were not designed to meet the safety and security standards of the 1990's, let alone current and future standards. As these facilities continue to age, I believe that the risk of failure is beginning to outweigh the economics of maintenance.

Where we need to go:
As we look to the future, I believe we must look across the full range of facility needs to ensure that the NNSA is able to deliver on its essential mission in a way that is safe, secure, and effective.

For smaller, lower-hazard acquisitions (such as light laboratory and office space), innovative acquisition processes can be enhanced and streamlined. I believe there are opportunities for the Enterprise in terms of how we handle General Plant Projects, third-party financing (TPF) arrangements, and public/private partnerships. The recently announced Administrative Support Complex (ASC) at Pantex is a precedent that illustrates effective use of third-party financing. I agree with the statement NNSA Administrator Klotz made at the Pantex ASC groundbreaking. He said that maintaining "the safety, security, and effectiveness of the nuclear weapons stockpile is critical to America's security," and that our workers "deserve a safe, functional, and adaptive workspace to carry out that mission." I believe that the NNSA laboratories could greatly benefit from the flexibility associated with using TPF and we are closely examining the successful approach taken by Pantex as our model going forward.

In your invitation letter, Mr. Chairman, you asked for suggestions on how we could improve our infrastructure position. The laboratories currently have the ability to use General Plant Projects (GPP) to undertake certain types of infrastructure projects under $10 million. Working closely with the NNSA site offices, the laboratories can use this limited authority to replace seriously dilapidated spaces. Today, we are using the $10 million authority we have to rehabilitate and repurpose existing structures. This strategy has allowed us to eliminate a significant number of old transportables that used to house technical staff. However, GPP funding limits have not changed since 2009. If the purchasing level were raised and indexed to keep up with inflation, we could make significant strides toward reducing deferred maintenance and creating quality workspace.

We are also actively exploring use of prefabricated buildings to create office space, light laboratory facilities, computing space, and even secure vault activities. These prefab buildings are well known in the commercial world and offer significant benefits in the areas of time, schedule, and cost.

The laboratories have opportunities for innovative public-private partnerships. In fact, several entities around Los Alamos are looking to develop light laboratory space adjoining the Laboratory. In partnership with our NNSA Site Office, we are looking to lease part of a new scientific building from private developers on terms that are favorable to the Laboratory and the Government.

The Los Alamos and Y-12 approaches toward smaller, less complicated nuclear acquisitions are a step in the right direction, but we must go further if we want to be responsive with major infrastructure projects. As a nation, we need to ensure that we are finding the right balance between risk and cost. With regard to projects, all relevant parties need to reach agreement on explicit programmatic and health and safety requirements early in the process. Furthermore, it is imperative that we adhere to these requirements rigorously throughout completion of these projects unless there is an extremely compelling reason to alter the requirements.

Closing:
In closing, I want to remind the members of the Subcommittee that all of our laboratories are currently hiring to replace the bright minds that served the nation so well through the Cold War and the first decades of Stewardship. As we hire the workforce of 2030, we need to wisely and prudently invest in our core infrastructure, as well as vibrant R&D capabilities that enable production, experiments, and computing to ensure that the next generation of Laboratory scientists, engineers, and technologists are able to successfully execute the mission. We cannot assume to know where budgets will go over time, but we must nevertheless invest in infrastructure that is worthy of the next generation of national laboratory scientists, engineers, and technologists.

Thank you Mr. Chairman for the opportunity to testify today. I would be happy to answer any questions.

Charles F. McMillan
Director
Los Alamos National Laboratory

Dr. Charles F. McMillan became Director of Los Alamos National Laboratory and President of Los Alamos National Security, LLC in June 2011. The Laboratory is a principal contributor to the Department of Energy mission to maintain the U.S. nuclear weapons stockpile and use innovative science to solve national security, energy, and environmental challenges. Los Alamos has an annual operating budget of approximately $2.45 billion, roughly 10,000 employees, and a nearly 40-square-mile site featuring some of the most specialized scientific equipment and supporting infrastructure in the world.

Since his appointment, McMillan has guided Los Alamos to continuing high levels of mission execution during times of deteriorating federal budgets. In 2011, McMillan created a senior management council implementing Lab-wide cost controls and efficiencies. He has signed four annual letter reports to the President and Congress assessing the Los Alamos-designed weapons in the nation's nuclear stockpile. In 2012, Los Alamos debuted novel systems providing exponential improvements in data-gathering for subcritical nuclear tests.

Before becoming Laboratory Director, McMillan served as the Principal Associate Director for Weapons Programs, responsible for the science, technology, engineering, and infrastructure enabling the Laboratory to fulfill its nuclear deterrent mission. McMillan directed the research that supported the technical analysis necessary to ensure stockpile safety, security, and effectiveness. This included small-scale materials experiments through fully integrated hydrotests that provided essential modeling and simulation data necessary for validation in the absence of full-scale nuclear testing.

McMillan has 30 years of scientific and leadership experience in weapons science, stockpile certification, experimental physics, and computational science. He began his career as an experimental physicist at Lawrence Livermore National Laboratory in 1983 where he held a variety of research and management positions for two decades.

He holds a doctorate in physics from the Massachusetts Institute of Technology and a bachelor's degree in mathematics and physics from Washington Adventist University. He has earned two DOE Awards of Excellence for his work in developing an innovative holographic tool that enhances the ability of scientists to predict nuclear performance. He is a frequent speaker on the vital role of national laboratories for the nation, and the importance of science, technology, engineering, and mathematics (STEM) education in cultivating the talent to carry out that role in the future.

He resides in Los Alamos, NM with his wife Janet, with whom he raised three children.

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Witness name: Charles F. McMillan

Capacity in which appearing: (check one)

(•) Individual

( ) Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: _____

Federal Contract or Grant Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) or grants (including subgrants) with the federal government, please provide the following information:

2016

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
DE-AC52-06NA25396	Department of Energy/ NNSA	$2,058,000,000	Management and Operation of Los Alamos National Laboratory

2015

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
DE-AC52-06NA25396	Department of Energy/ NNSA	$1,912,940,000	Management and Operation of Los Alamos National Laboratory

2014

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
DE-AC52-06NA25396	Department of Energy/ NNSA	$1,962,384,000	Management and Operation of Los Alamos National Laboratory

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2015

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

2014

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

2013

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

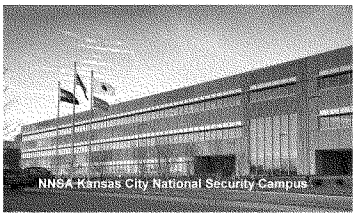
Statement of Mr. John Ricciardelli
President of Honeywell Federal Manufacturing & Technologies

House Armed Services Committee
Strategic Forces Subcommittee

September 7, 2016

Kansas City National Security Campus - Delivering Innovation and Cost Savings
Honeywell has a proud history of serving as the prime contractor to the Department of Energy's Kansas City National Security Campus (KCNSC) for nearly 70 years. Today, the KCNSC is a 1.5 million square-foot, state-of-the-art multi-mission engineering and manufacturing campus that supports the Department of Energy's National Nuclear Security Administration's (NNSA) important mission.

About 3,000 Honeywell employees use over 60,000 years of cumulative experience to ensure the safety, security and reliability of the nuclear arsenal by supplying mission-critical mechanical, electrical components and engineered material components. Honeywell delivers approximately 200,000 parts annually in support of the primary mission and provides engineering services and special production to other national security agencies.


NNSA Kansas City National Security Campus

As a trusted partner of the NNSA and other government agencies, we have earned a valued reputation for innovation and cost-effective solutions by applying commercial best standards in managing operations, meeting demanding budget requirements, and delivering outstanding mission results.

Year over year, we successfully deliver exceptional operational performance with a 99+ percent on-time delivery and six- sigma quality performance. Our approach is patterned after commercial models to save time, resources, and money while ensuring continuous quality performance. Continuous improvement is at the core of our employee engagement culture– do the right things, in the right way, to satisfy customers and enable productivity. There is a constant drive and incentive to do more with less – while maintaining industry leading safety and security performance.

Today, the KCNSC's primary focus is on modernizing the nation's nuclear stockpile, using the latest technologies to deliver a safe, secure and reliable nuclear deterrent. It is an exciting and challenging time in the nuclear security enterprise with many new and emerging life extension programs being progressed through their development phases. Our facility is witnessing exceptional growth this year – projecting about $900 million dollars in total scope.

This workload is comparable to levels not witnessed since the Cold War.

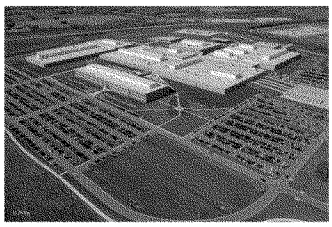
Public/Private Partnership Drives Modernization
While it is an exciting time at the KCNSC, we have had our challenges. About 10 years ago, with increasing pressure on defense budgets and growing deferred maintenance costs on Kansas City's aging 70-year old facility, Honeywell was challenged to help the Federal government continue its mission in the most cost-efficient way possible.

The old Bannister Federal Complex facility was constructed in the 1940s, during a time when many conventional building materials where in short supply and infrastructure challenges included inadequate electrical power, water and gas supplies. This made installation of modern manufacturing and laboratory equipment difficult, expensive, and hazardous. Prior to the decision to relocate, Congressional line item funding was being pursued to replace the high voltage electrical switchgear, reconstruct the polymer production facility, replace major HVAC systems, and replace large portions of the roof.

Honeywell developed a responsive infrastructure strategy that transformed an enterprise mostly reliant on the aging infrastructure to a state-of-the-art facility with emerging technologies focused on future threat. The end result is a shining example of how a successful public/private partnership can combine the greatest strengths of government and industry to be cost effective, and sustainable while minimizing our deferred maintenance liabilities and supporting a critical national security mission.

Part of that strategy included a unique lease agreement for the 1.5 million square foot Kansas City National Security Campus. The U.S. General Services Administration, acting as the Federal government's broker, signed the lease agreement with CenterPoint Zimmer, LLC, for the $687 million campus in June 2010. Construction of the facility was completed late 2012.

The new campus exemplifies NNSA's vision to transform into a more cost-effective, energy-efficient, adaptive and sustainable model while supporting the nuclear deterrent. The development project is a case study for a successful public/private partnership in which NNSA used a 20-year operating lease through the General Services Administration to eliminate $120 million in annual facility costs plus an additional $238 million in deferred maintenance and emergency repair costs at the Bannister facility for a $60 million annual lease payment for the new campus.



This lease commitment enabled developer CenterPoint Zimmer to secure third party financing to build and deliver the facility at a cost and schedule far less than the government could have executed. The project was accomplished with positive cash flow to the federal government, even including the cost of relocation. Since the project began in 2006, the net savings to the taxpayer more than $500 million while delivering a new flexible infrastructure to meet national security manufacturing needs for the next two decades.

The construction of the Kansas City National Security Campus helped revitalize the construction industry by generating more than 1,000 new construction jobs and boosting the local economy with hundreds of millions of dollars in much needed economic development to the region, including $1.2 million new tax revenue to the Grandview School District.

Honeywell continues to support NNSA's commitment to ensuring the positive redevelopment of the old Bannister Facility and not leaving blight on the community. By funding the transfer of the Bannister

Facility in Fiscal Year 2017, the government will eliminate most of its future environmental liabilities through third party demolition and remediation and could save approximately $650 million dollars.

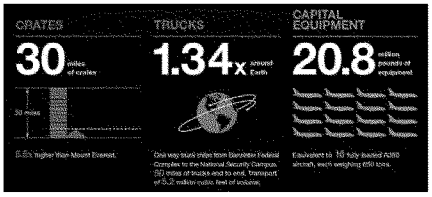
Modern, State-of-the-Art-Campus
The Kansas City National Security Campus is an award-winning, state-of-the-art LEED (Leadership in Energy and Environmental Design) Gold manufacturing and engineering facility with a high-tech look and an environmentally friendly presence. The new smaller, more efficient facility maintains the capability to assure the reliability, safety and security of the nation's defense systems while enabling NNSA to recruit and retain the next generation of scientists and engineers.

The open layouts, utility grids, and tall ceilings at KCNSC enables a more agile, flexible design to adapt to changing mission requirements. Basic lean manufacturing principles, such as placing similar processes in proximity has also minimized product cycle time and maximized productivity. White space was designed into all production areas to assure space for emerging programs without rearrangement delays. Safety risks and hazards have been greatly reduced at the new facility as well. Our safety performance is 95% better than the industry average and the best within NNSA.

The modern campus showcases innovation and cost savings by reducing our footprint by 50 percent and reducing costs by $150 million annually. The KCNSC was designed to support ongoing sustainable efforts including: preferred parking spaces for fuel efficient and low emitting vehicles; over 50 percent of the site protected as open green space with native vegetation; and a white roof to help reflect solar heat; and sustainable materials used in construction.

The highly-efficient water management design is saving more than 3.2 million gallons of water a year when compared to code-compliant design practices, which is equivalent to 20 million bottles of water saved every year. Refrigerants with reduced global warming and ozone depletion potentials were used during design and construction.

The Largest Industrial Move in the United States
One of the nation's largest industrial moves began in January 2013. The KCNSC relocation teams safely and securely moved a wide range of equipment including tools weighing as little as 6 ounces to a milling machine weighing 87,000 pounds. By the end of the move, about 3,000 truckloads transported thousands of pieces of equipment and 40,000 crates, which if stacked would be more than 5 times the height of Mount Everest.



In addition, employees built more than 20,000 components in advance to ensure uninterrupted deliveries while production departments were transitioning between sites. The move finished in July 2014, one month ahead of the original schedule and $18M under budget.

With Honeywell's logistical support, NNSA donated surplus machining equipment from the old facility to the KC Engineering Zone at the University of Missouri, Kansas City. These mills, drills and cutting machines, worth approximately $300,000, are giving urban Kansas City high school students hands-on experience with manufacturing and STEM careers. In all, 81 truckloads of property have been transferred to other Federal, state or local agencies or donated for reuse.

Demonstrating Excellence and Innovation in the Public Sector
The successful transformation and relocation of the KCNSC was made possible by a unique Governance Model developed by Honeywell and NNSA. Known as the Kansas City Governance Model, the new model for government oversight applies best-in-class commercial standards in managing operations, transforming business functions, and delivering outstanding mission results. It is a mutual operating model that maximizes trust, cooperation, and opportunity and currently yielding hundreds of millions of dollars in annual costs savings compared to prior alternatives.

This unique public/private partnership model is fundamentally reorienting the perception of performance in government and has resulted in direct cost savings of $35M annually and has enabled more than $300M in additional savings in strategic sourcing and facility relocation. The transition required significant changes in contract requirements, performance evaluation, systems for management assurance, and operating requirements.

The new oversight model did not diminish the role of the local Federal staff, but simply changed the focus from transactional-based oversight to system-based oversight, resulting in more effective use of resources. While the new oversight model did reduce the number of government directives, its intent was not to diminish compliance.

Sharing Best Practices across the NNSA
Honeywell consistently earns the highest NNSA contractor rating by applying commercial best practices which drives the Kansas City site's performance no different than any other commercial Honeywell site.

Our operating model focuses on our effectiveness and opportunities in three critical areas: Honeywell Strategic planning process, Operations via our Annual Operating Plan, and People through our Management Resource Review. The Honeywell Operating System provides transparency and tiered accountability to optimize order to delivery with processes for safety, quality, delivery, cost and inventory excellence.

To add value to the NNSA's Nuclear Security Enterprise (NSE), Honeywell has initiated collaborative partnerships and shared Honeywell operating processes and applied technologies that drive performance across the NSE. This interchange has led to improved operations across NNSA in the areas of supply chain assurance, risk management, export control, and operations.

Honeywell is proud to support the critical mission of the NNSA, and we stand ready to serve in the current and future missions of the US Government.

John Ricciardelli
President,
Honeywell Federal Manufacturing & Technologies

John Ricciardelli is President of Honeywell Federal Manufacturing & Technologies (FM&T), which manages and operates the Department of Energy's Kansas City National Security Campus. With more than 2,700 employees in Kansas City and Albuquerque, the Kansas City National Security Campus provides diverse engineering, manufacturing and secure sourcing services for national security.

In this position, Ricciardelli is responsible applying best-in-class commercial standards in managing operations and delivering outstanding mission results with a $900M annual operations budget.

Prior to this position, Ricciardelli served as the Honeywell Program Director for the Airbus A350XWB Program where he was responsible for leadership of the Extended Mechanical and Air Management Systems development program. He was directly responsible for support of strategic business initiatives including proposal development, strategic planning support, customer support, and product development within this platform program.

A 32-yr veteran of Aerospace industry, Ricciardelli also served as Honeywell Director, Military Systems Engineering and Applications in addition to leadership positions for the AS900/HTF7000 engine programs and various Program Management and Customer & Product Support roles. He also served as Vice President, ownership experience and product support for Eclipse Aviation in Albuquerque, NM. as well as Executive Director, for Bell Helicopter in Fort Worth, Texas and Mirabel, Canada.

Ricciardelli has a Bachelor's degree in Mechanical Engineering from Pennsylvania State University (PSU) and an Executive Master's in Business Administration (EMBA) degree from Texas Christian University (TCU). He also has a Certificate of Global Leadership from Thunderbird University and is Executive Black Belt certified.

DISCLOSURE FORM FOR WITNESSES
COMMITTEE ON ARMED SERVICES
U.S. HOUSE OF REPRESENTATIVES

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(5), of the Rules of the U.S. House of Representatives for the 114th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants), or contracts or payments originating with a foreign government, received during the current and two previous calendar years either by the witness or by an entity represented by the witness and related to the subject matter of the hearing. This form is intended to assist witnesses appearing before the House Committee on Armed Services in complying with the House rule. Please note that a copy of these statements, with appropriate redactions to protect the witness's personal privacy (including home address and phone number) will be made publicly available in electronic form not later than one day after the witness's appearance before the committee. Witnesses may list additional grants, contracts, or payments on additional sheets, if necessary.

Witness name: John Ricciardelli

Capacity in which appearing: (check one)

○ Individual

◉ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Honeywell Federal Manufacturing & Technologies

Federal Contract or Grant Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) or grants (including subgrants) with the federal government, please provide the following information:

2015

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant
Kansas City National Security Campus	National Nuclear Security Administration	$900 million per year	M&O Contractor

2014

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant

2013

Federal grant/ contract	Federal agency	Dollar value	Subject of contract or grant

Foreign Government Contract or Payment Information: If you or the entity you represent before the Committee on Armed Services has contracts or payments originating from a foreign government, please provide the following information:

2015

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

2014

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

2013

Foreign contract/ payment	Foreign government	Dollar value	Subject of contract or payment

Statement of Lt. Gen. Frank G. Klotz, USAF (Ret.)
Administrator
National Nuclear Security Administration
U.S. Department of Energy
on the
National Nuclear Security Administration's Plan to Address Deferred Maintenance
Before the
Subcommittee on Strategic Forces
House Committee on Armed Services

September 7, 2016

Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee, thank you for the opportunity to discuss the challenges and progress made by the Department of Energy's National Nuclear Security Administration (NNSA) in addressing deferred maintenance across the nuclear security enterprise. We value this Subcommittee's leadership in national security and its strong support for the mission and people of the NNSA.

Safe, reliable, and modern infrastructure at NNSA's national laboratories and production plants is absolutely essential to the accomplishment of our vital national security missions and the well-being of our workforce. Our infrastructure is extensive, complex, and, in many critical areas, several decades old. More than half of NNSA's approximately 6,000 real property assets are over 40 years old, and nearly 30 percent date back to the Manhattan Project era. Many of the enterprise's critical utility, safety, and support systems are failing at an increasing and unpredictable rate, which poses both programmatic and safety risk.

Given competing priorities, the resources available to maintain NNSA's infrastructure have historically not kept pace with growing needs. NNSA's total deferred maintenance on fixed assets (real property) stood at $3.7 billion at the end of Fiscal Year (FY) 2015. Last year, Secretary of Energy Moniz directed that infrastructure investment across all of DOE, including NNSA, be funded at levels sufficient to at least halt the growth of deferred maintenance starting in FY 2016. Significantly, the investments made in FY 2016, requested in NNSA's budget and supported by Congress, will halt the growth of deferred maintenance. And NNSA's FY 2017 budget request, if similarly supported, will actually begin to decrease NNSA's deferred maintenance backlog.

To control deferred maintenance, NNSA is working to reduce existing deferred maintenance and limit the creation of new deferred maintenance by taking the following actions:

- Improving practices to document deferred maintenance in order to enhance accuracy and comparability across all sites;
- Deploying new decision-making tools for more effective use of resources;
- Increasing resources for recapitalization and maintenance efforts and line-item construction;
- Disposing of unneeded facilities; and
- Implementing improved project management systems and all appropriate acquisition options to ensure cost effective delivery of new construction.

NNSA has also introduced an improved infrastructure budget structure, supported by Congress in FY 2016, that separates infrastructure maintenance and recapitalization from day-to-day operations. This new structure improves infrastructure stewardship in two ways. First, it focuses on maintenance to limit the growth of deferred maintenance; second, it emphasizes recapitalization to replace obsolete facilities. The focus on recapitalization also improves minor construction project management by (1) increasing planning requirements prior to project approval and execution; (2) creating smaller, one-to-two-year projects; and (3) closely tracking financial and schedule performance. NNSA has created standard prioritization criteria to better assess each project's relative importance to achieving program results and improving safety.

NNSA also began requesting a higher percentage of funding for recapitalization and maintenance projects starting in FY 2015. These funding increases are essential to decreasing deferred maintenance, arresting the declining state of infrastructure, increasing productivity, improving safety, eliminating costly compensatory measures, and shrinking the NNSA footprint through the disposition of unneeded facilities.

NNSA has made significant progress in the disposition of excess facilities. In FY 2014 and FY 2015, for example, buildings 9744 and 9808 at Y-12 were razed. The Administration's FY 2017 budget also includes $200 million to deactivate and dispose of the Bannister Federal Complex in Kansas City, Missouri. The plan for this project, which has been supported by all four of NNSA's authorizing and appropriating committees, will result in transferal of the property to a private redeveloper in March 2017. Assuming the project goes forward in early 2017, this action alone will save as much as $500 million compared to the cost if the government were to complete the decommissioning on its own.

Broader Infrastructure Requirements

NNSA's nuclear security enterprise requires a right-sized and balanced set of general purpose, programmatic, and security infrastructure that supports mission work at acceptable levels of risk. NNSA's infrastructure is comprised of two types of property – real property, such as buildings, building systems/components (e.g., heating, ventilating, and air conditioning [HVAC], utilities, and roads) and personal property, (e.g., programmatic equipment, gloveboxes, scientific tools, and manufacturing equipment). NNSA's infrastructure requires investments beyond those specifically captured by the deferred maintenance metric, which does not account for the full scope of necessary infrastructure investments. Although this metric captures deficiencies in real property, for instance, it does not reflect deficiencies in equipment, technology obsolescence, or shortfalls in infrastructure capability and capacity. Consequently, we continue to refine our approach to infrastructure recapitalization to address for the full suite of work that must be performed.

Strategic Materials Infrastructure

NNSA's Strategic Materials capabilities – including plutonium, uranium, tritium, and lithium – are central to the U.S. nuclear deterrent. Consequently, NNSA is recapitalizing the facilities that support these materials with projects such as the Chemistry and Metallurgy Research Replacement project at Los Alamos National Laboratory (LANL) and the Uranium Processing Facility (UPF) at the Y-12 National Security Complex (Y-12).

For most of the past 60 years, LANL performed analysis of the chemical and material properties of plutonium in the Chemistry and Metallurgy Research building, a 1950s-era facility that is now at the end of its useful life. The Chemistry and Metallurgy Research Replacement project will move existing functions into newer, safer, and more efficient workspace.

Under NNSA's Uranium Strategy, key uranium capabilities are being revitalized throughout the nuclear security enterprise. NNSA's uranium infrastructure spans several sites: uranium storage and processing mostly occurs at Y-12, with some R&D capabilities located at LANL, Lawrence Livermore National Laboratory, and Oak Ridge National Laboratory. The UPF at Y-12 is vital to modernizing NNSA's uranium infrastructure, providing critical capabilities to the nation's nuclear weapons program, nonproliferation missions, and Naval Reactors. NNSA is committed to ceasing enriched uranium (EU) programmatic operations in Y-12's Building 9212 and delivering UPF by 2025 for no more than $6.5 billion. While NNSA is reducing mission and safety risks in existing facilities to ensure that long-term EU operations continue safely, infrastructure risk reduction efforts must continue to support additional capabilities.

At the Savannah River Site, NNSA is employing the Tritium Responsive Infrastructure Modifications Program to mitigate infrastructure risks at the site. In FY 2015, NNSA approved CD-0 for the Tritium Production Capability (TPC) line-item project, which mitigates potential risks to the NNSA's Stockpile Stewardship Programs stemming from conducting operations in outdated facilities that have exceeded their planned useful lives. Capabilities and processes related to, but not including, loading of reservoirs with tritium are currently housed in H-Area Old Manufacturing (HAOM), a 1950s-era building that does not meet current codes and standards and presents a risk to the tritium mission due to the age of the building and systems as well as susceptibility to seismic events and severe weather. We are nearing completion of the Analysis of Alternatives (AoA), which will inform the conceptual design phase of the project. Alternatives considered in the AoA include repair and upgrade of existing facilities, new construction, modification of existing facilities, and off-site capabilities.

With respect to lithium, NNSA has developed a strategy to increase the supply and sustain the infrastructure needed to fabricate lithium components. Lithium is processed and stored at Y-12 in a Manhattan Project-era building that is well beyond its design life. The building has experienced rapid structural and process equipment degradation in the last 15 years. Additionally, the purification process was placed in cold standby in FY 2013 due to increasing maintenance costs and degrading reliability of the equipment. Direct material recycle is currently the only source of lithium for warhead life extension programs (LEP). NNSA's Lithium Production Capability (LPC) project will re-establish capabilities to produce enriched lithium-6 to meet the needs of NNSA and other government agencies. NNSA is currently conducting an AoA that is considering new technologies, various facility options, and off-site capabilities to inform options for the path forward.

Enterprise Security

NNSA is conducting a Site Condition Review (SCR) of the physical security systems at all NNSA facilities to develop a security refresh strategy. Given the sizeable anticipated expense, we are focused on identifying less expensive options that preserve necessary levels of security.

NNSA has tasked the Center for Security Technology Analysis, Response, and Testing (CSTART) to perform much of the planning to assess needs and integrate solutions. This effort will determine the condition of critical security equipment (e.g., sensors, barriers, and cameras) and infrastructure (e.g., fiber optic wiring, lighting systems, and uninterrupted power source systems), as well as establish schedules for recurring maintenance, necessary replacements, and strategic upgrades over a 10-year cycle.

Cost containment efforts will include competing the construction work needed to replace security infrastructure and strategic planning to minimize the footprint where feasible. This comprehensive review will also identify sustainment needs that can be addressed to maintain system performance until recapitalization is complete. Based on a site condition review, NNSA will continue to make prioritized investments in security infrastructure and technology.

Deploying New Decision-Making Tools and Management Systems

NNSA's traditional measures of facility condition are based on financial metrics that do not capture the actual condition or the relative importance of the asset. To correct this deficiency, NNSA is moving to a risk-based model that evaluates each asset's ability to support core capabilities. As part of this effort, NNSA is implementing several decision-making tools to make better data-driven, risk-informed management decisions. These new tools include: Enterprise Risk Management (ERM) – composed of the Mission Dependency Index (MDI) and BUILDER – and the G2 program management system.

NNSA started using an ERM methodology in 2015 to inform its programming decisions for future budgets, beginning with FY 2017. The ERM methodology uses MDI to measure "consequence to mission" and uses the BUILDER tool to measure the "likelihood of the consequence occurring," providing a more accurate picture of where the enterprise currently stands and helping to prioritize future investments. MDI combines the impact to the NNSA mission if the asset were lost, the difficulty of replacing the asset, and the interdependency of assets. BUILDER is a Knowledge-Based Condition Assessment tool developed by the U.S. Army Corps of Engineers and recommended by the National Academy of Sciences. The tool will standardize data collection and reporting on facility condition at the major building component level (e.g., roof, HVAC, structure), providing much greater insight into a facility's condition and its risk of failure. Additionally, BUILDER will allow NNSA to better predict repairs at the optimal time in each component's lifecycle, allowing us to better prevent deferred maintenance from occurring in the first place and to prioritize investments to quickly reduce deferred maintenance when it occurs. Further, BUILDER will allow NNSA to better prioritize investment decisions based on current and future capability and capacity shortfalls.

Additionally, NNSA issued a Safety, Infrastructure, and Operations Program Management Plan, which standardizes terminology, increases consistency in cost reporting, and improves transparency into direct and indirect funded infrastructure investments. To support the new program management methodology, NNSA deployed the G2 program management system in FY 2015, which empowers Management & Operating (M&O) partners to manage at the project level with appropriate transparency. The system also provides NNSA senior management a common and transparent picture of the allocation and execution of NNSA's infrastructure spending.

Finally, NNSA is expanding on the success of its Roof Asset Management Program (RAMP) to address the needs of other common building components that can benefit from supply chain management efficiencies and lower repair costs. In FY 2015, NNSA expanded strategic procurements beyond RAMP to Cooling and Heating Asset Management (CHAMP) and plans to expand this approach to water systems in the future. NNSA will issue the Request for Proposal for CHAMP this year.

Practices for Documenting Deferred Maintenance

In 2013, the Federal Real Property Council (FRPC) chaired by the Office of Management and Budget (OMB) and comprised of CFO Council agencies, directed members to begin annual tracking and reporting of repair needs (i.e., correcting deficiencies to return an asset to its original condition), which is distinct from deferred maintenance (i.e., correcting deficiencies that need to be performed to keep "fixed assets in an acceptable condition"). The tracking and reporting of repair needs allow Federal agencies to better quantify real property deficiencies. Deficiencies are still captured by each agency and the FRPC as part of the calculation of the FRPP Condition Index data element. During 2015, NNSA worked with representatives from NNSA sites to document a standard method for determining deferred maintenance and repair needs to ensure standardized reporting across all NNSA sites. In 2016, NNSA is using this standardized approach to revalidate information on the condition of infrastructure and the assessment of deferred maintenance and repair needs to ensure accuracy and consistency across NNSA's enterprise. The results will not be available until after the fiscal year ends, but NNSA expects that this will result in some amount of deferred maintenance being reclassified as repair needs, so there will be a one-time administrative reduction to the current deferred maintenance total.

Improved Project Management

The NNSA Office of Acquisition and Project Management (APM) is driving continued improvement in contract and project management practices. This includes policies and procedures to institute rigorous analyses of alternatives; provide clear lines of authority and accountability for Federal and contractor program and project management; improve cost and schedule performance; and ensure that Federal Project Directors and Contracting Officers with the appropriate skill mix and professional certifications are managing NNSA's work. NNSA also established the Office of Project Assessments, reporting directly to the Principal Deputy Administrator, to ensure senior leadership visibility and accountability throughout the enterprise for project performance. This office generated significant savings in cost avoidances as a result of its independent project peer reviews.

Since 2011, NNSA has completed approximately $1.4 billion in projects, a portion of NNSA's total project portfolio, 5 percent under original budget. Significant examples in the last year include the UPF Site Readiness Subproject, which was delivered $20 million under budget, and Y-12's Nuclear Facility Risk Reduction Project, which was delivered $6 million under budget and 11 months ahead of schedule. Using the Department's best practices, the UPF and Chemistry and Metallurgy Research Replacement Facility projects were restructured into smaller, more manageable subprojects, significantly reducing project delivery risk.

Capital Acquisition

NNSA will continue to focus on delivering timely, best-value acquisition solutions for all of our programs and projects, including non-traditional acquisition practices where appropriate and consistent with statutory authorities and consistent with the CBO, OMB and Budget Committee guidance as outlined in A-11 and A-94.

To this end, NNSA recently achieved a major success with the construction of a brand new facility for the production of non-nuclear components for nuclear weapons in Kansas City, Missouri. The facility was built by a private developer and then leased to NNSA through the General Services Administration (GSA). The modern Kansas City campus opened for business in August 2014, replacing an antiquated, World War II-era factory. The net result is a 50 percent reduction in our footprint in Kansas City, a $100 million a year savings to the U.S. Government in operating and maintenance costs, and significantly improved operational efficiency and workforce morale.

Just last month, NNSA broke ground on the Administrative Support Complex at the Pantex nuclear weapons assembly and dismantlement facility in Amarillo, Texas. There, our M&O partner entered into a lease agreement for a new office building that a private developer will build using third-party financing. This project will allow roughly 1,000 employees to move out of dilapidated, 1950s-era buildings into a modern, energy efficient workspace. It will also eliminate approximately $20 million in deferred maintenance at the Pantex site and enhance recruitment and retention by improving the quality of the work environment.

Where it provides best value for the government, NNSA is pursuing line-item capital construction projects such as the Albuquerque Complex. NNSA's Federal staff in Albuquerque needs a modern, efficient, suitable work space. The current Albuquerque Complex, constructed in 1951, is well beyond its designed life and does not meet NNSA's needs. Just last week, 12 roof tiles fell down at the complex, and while there were no injuries, this is just one of many examples of the need to replace facilities that can no longer be adequately maintained due to their advanced age. With the continued support of Congress, we will deliver modern office facilities for the Albuquerque workforce while also disposing of the current complex. Further, to maximize the efficiency and effectiveness of this project, NNSA is leveraging the U.S. Army Corps of Engineers' broad experience in traditional line item construction projects to act as both our design agent and construction agent. This cooperation builds on our previous experience using the Corps of Engineers as the construction agent for the High Explosives Pressing Facility at Pantex.

Finally, NNSA's national security missions cannot be performed effectively without the oversight from our Federal workforce. In particular, its modernization programs require adequate Federal staff to perform program management of these multibillion dollar efforts. As one measure of NNSA's staffing-to-workload imbalance, each acquisition professional manages an average of $116 million of program dollars versus a government average of $10.7 million. Furthermore, relative to FY 2011, NNSA's workforce is 17 percent smaller despite an 18 percent increase in funding. NNSA needs, and has budgeted for in its FY 2017 budget request, additional staff to successfully execute the next phase of warhead LEPs and infrastructure

modernization programs. Moreover, continued reductions in our Federal workforce numbers threaten to compromise our ability to execute these vital missions.

Conclusion

In closing, NNSA is committed to arresting the growth of deferred maintenance, disposing of unneeded facilities, and continuing to improve the management of its infrastructure. Our strategy for reducing deferred maintenance is innovative and aggressive, and it will lead DOE and NNSA toward a new era in which infrastructure management receives high-level attention that is commensurate with its importance to the nuclear security mission. We look forward to continuing to work with Congress on these and other important national security issues.

Lieutenant General Frank G. Klotz, USAF (Ret.)
Under Secretary for Nuclear Security and NNSA Administrator

Lieutenant General Frank G. Klotz, United States Air Force (Ret.), was confirmed by the Senate on Tuesday, April 8, 2014, as the Department of Energy's Under Secretary for Nuclear Security and Administrator for the National Nuclear Security Administration (NNSA).

As Under Secretary for Nuclear Security, Klotz is responsible for the management and operation of the NNSA, as well as policy matters across the Department of Energy and NNSA enterprise in support of President Obama's nuclear security agenda.

Prior to his Senate confirmation, Klotz served in a variety of military and national security positions. As the former Commander of Air Force Global Strike Command, a position he held from 2009 to 2011, he established and then led a brand new 23,000-person organization that merged responsibility for all U.S. nuclear-capable bombers and land-based missiles under a single chain of command. From 2007 to 2009, Klotz was the Assistant Vice Chief of Staff and Director of the Air Staff. He served as the Vice Commander of Air Force Space Command from 2005 to 2007 and was the Commander of the Twentieth Air Force from 2003 to 2005.

Klotz served at the White House from 2001 to 2003 as the Director for Nuclear Policy and Arms Control on the National Security Council, where he represented the White House in the talks that led to the 2002 Moscow Treaty to reduce strategic nuclear weapons. Earlier in his career, he served as the defense attaché at U.S. Embassy Moscow during a particularly eventful period in U.S.-Russian relations.

A distinguished graduate of the U.S. Air Force Academy, Klotz attended Oxford University as a Rhodes Scholar, where he earned an MPhil in international relations and a DPhil in politics. He is also a graduate of the National War College in Washington, DC. Most recently, Klotz was a senior fellow for strategic studies and arms control at the Council on Foreign Relations.

James McConnell
Associate Administrator for Safety, Infrastructure, and Operations

Mr. McConnell is the Associate Administrator for Safety, Infrastructure and Operations. He is responsible for overall NNSA safety activities, operations, infrastructure, capital planning, packaging and transportation, nuclear materials integration and sustainment & environmental programs for the NNSA National Security Enterprise. In addition, Mr. McConnell is the NNSA Central Technical Authority responsible for overall safety policy and interpretation throughout NNSA.

Prior to his current position, Mr. McConnell was the Deputy Associate Administrator for Infrastructure and Operations. He held several positions within NNSA's Office of Defense Programs including Assistant Deputy Administrator for Nuclear Safety and Operations.

Mr. McConnell was the first Chief of Defense Nuclear Safety for NNSA. In that position, he established the office and functions of the CDNS.

Prior to joining NNSA, Mr. McConnell held several senior staff positions at the Defense Nuclear Facilities Safety Board (DNFSB) including Deputy Technical Director, Group Leader for the Nuclear Weapons Program, and Site Representative at the Pantex Plant.

A former U.S. Navy submarine officer, he holds a bachelor's degree in electrical engineering from the U.S. Naval Academy and master's degrees in engineering from the Catholic University of America and George Washington University.

DOCUMENTS SUBMITTED FOR THE RECORD

SEPTEMBER 7, 2016

CHALLENGES

NNSA infrastructure is too big, too old & too brittle

- Facilities & systems are well beyond end-of-life
- Block obsolescence limits maintenance & repair options
- Excess facilities pose unacceptable risks

Failures are increasing in frequency, severity & unpredictability

- Multiple Fire Suppression Breaks: PX bays/cells (6/2014 & 8/2015), Y-12 Beta-4 (8/2015) & NNSS DAF (11/2013)
- Multiple HVAC failures resulted in program delays: LLNL superblock (5/2015) & NNSS (8/2015)
- Multiple roof leaks/failures: Y-12 Alpha-5 (7/2015) & 9206 (2/2016)
- Electrical Distribution Panel at Y-12 Beta-4 caught on fire & hydraulic oil leaked from an idle 7,500 ton press (3/2015)

Sustained investments are needed

- Specialized equipment lead times can be up to two years for purchase & certification
- Some systems can only be replaced in phases without impacting programs
- Continued safe & environmentally compliant operations

Infrastructure risks become safety & program risks

Note: This image was altered to remove photos that did not reproduce clearly. The original slide, with four photos illustrating facilities failures, is retained in the subcommittee files.

The Secretary of Energy
Washington, DC 20585

December 23, 2015

Mr. Shaun Donovan
Director
Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Dear Director Donovan:

I greatly appreciate the hard work and cooperative approach of your office to craft a fiscally responsible FY 2017 budget for the National Nuclear Security Administration (NNSA) that supports the President's agenda to maintain a safe, secure, and effective nuclear weapons stockpile; modernize our nuclear security enterprise; reduce the threat of nuclear proliferation; and support the U.S. Navy's nuclear propulsion program. As requested, we will provide your staff a FY 2017-2021 funding table based on the OMB proposed settlement.

While the OMB proposed settlement provides a workable framework for the FY 2017 budget, the OMB proposed settlement for FY 2018-2021 does not reflect the funding that we estimate is necessary to meet Administration requirements over the period of the Future Years National Security Program (FYNSP). We estimate that an additional $5.2 billion over FY 2018 – 2021 is needed to establish a viable and sustainable program portfolio.

This Administration has pursued a disciplined process in defining the requirements to meet the President's nuclear security and non-proliferation policy goals and to support the Navy. This in turn has driven the NNSA program planning and budgeting process to identify the funds needed to satisfy those requirements. The OMB proposed settlement for the FYNSP ignores or underfunds many of those requirements with no supporting programmatic rationale. If left uncorrected, the proposed FYNSP will lack credibility with Congress and stakeholders; within NNSA it will fuel uncertainty in program execution, creating the potential for cost and schedule growth across the nuclear security enterprise. Specifically, the lack of a credible FYNSP will undermine the Administration efforts to achieve new plutonium capabilities, replace aging infrastructure, and fulfill the President's Prague agenda to secure and dispose of U.S. surplus plutonium through such efforts as dilution and disposal instead of by irradiation as MOX fuel. For this Administration's national security legacy and for the next Administration's planning requirements, it would not be responsible to submit a budget with such obvious programmatic gaps.

Events elsewhere in the world reaffirm the seriousness of the threat environment in which we live and underscore the need for a credible nuclear security program portfolio. Since the FYNSP sets the framework and direction that guide the specific budget proposals in FY 2017, we believe that it is imperative that the out-year FYNSP issues be resolved prior to the release of the President's budget to Congress on February 1, 2016. I believe that this matter should be

addressed by the principals immediately after the start of the New Year and prior to the completion of the President's FY 2017 budget process.

While the out-years of OMB's proposed FYNSP do support several specific requirements, such as the life extension programs and construction of the Uranium Processing Facility, it provides either no funding or inadequate funding for key program and project areas previously established as Administration priorities. Specific examples of known shortfalls include:

- **Plutonium Disposition:** In 2000, the United States and Russia agreed to eliminate excess weapons-grade plutonium to prevent its theft or diversion for illegal nuclear programs. From a nonproliferation standpoint, plutonium is of the greatest concern because of how little is required to make a nuclear bomb. The principals have approved our proposal to terminate the MOX construction project and instead pursue an alternative disposition path based on dilution and disposal. The cost of this alternative is $1.5 – $1.7 billion from FY 2018-2021, of which $844 million is for dilute and dispose; and $610 million is for placing MOX in a safe and secure configuration. The OMB proposed settlement provides only $1.3 billion, of which $415 million is for disposition and $884 million for MOX reconfiguration. The Department believes we should plan for at least $1.5 billion in the Budget. Failure to demonstrate our commitment to fund the dilution and disposal pathway will undermine the credibility of the Administration's effort to gain Congressional action to terminate MOX. It also will dampen prospects for gaining the necessary agreement from Russia. This could leave in place the more expensive MOX option with Congressional mandates to fund construction with little prospect of ultimate success.

- **NNSA Facility Infrastructure:** A majority of NNSA's facilities and systems are well beyond end-of-life. More than 50 percent of facilities by square footage are 40 years old or older, nearly 30 percent are Manhattan project era, and 12 percent are excess to program needs. Infrastructure problems such as falling ceilings are increasing in frequency and severity, unacceptably risking the safety and security of both personnel and materials at NNSA facilities, as well as in some instances, potential offsite risks. The entire complex could be placed at risk if there is a failure where a single point would disrupt a critical link in infrastructure. We appreciate the increased support for infrastructure in the FY 2017 Budget Allowance that will arrest the growth of deferred maintenance in the nuclear security enterprise in FY 2017. NNSA will allocate $153 million of added topline in the December 5th OMB Passback to increase FY 2018-2021 infrastructure funding from NNSA's target of $1.27 billion to $1.43 billion. To fully address infrastructure needs, however, additional resources are required in the out-years. The FY 2018-2021 funding level in the OMB settlement proposal is still only one-half of the $2.8 billion needed to address infrastructure issues in the future.

- **Exascale High Performance Computing:** The OMB proposed settlement provides $120 million of NNSA's $670 million request for the exascale computing initiative. While the Department appreciates OMB's additional funding for this important program, the OMB proposed settlement level is not consistent with estimated requirements to meet the President's July 2015 Executive Order on the National Strategic Computing Initiative

(NSCI). There has been a steady decline in the performance of the nuclear weapons computer codes needed to ensure the safety, security, and reliability of the nuclear stockpile. The NSCI was designed, in part, because U.S. vendors will not develop our mission centric needs without this full investment. The NSCI also entails substantial collaboration between DOE and DOD.

- Domestic Uranium Enrichment (DUE): The Department appreciates the OMB proposed settlement providing $327.5 million in FY 2018-2021 to support downblending of highly enriched uranium. The OMB proposed settlement, however, does not provide any funding for the required centrifuge technologies that would be necessary by FY 2041 to support enrichment uranium requirements. The interagency process found that the domestic uranium enrichment program should initiate the program for build out in FY 2016 based on the recognized uranium need date. NNSA estimates it needs $466.5 million in resources in FY 2018 through FY 2021 on top of the $327.5 million provided in the OMB proposed settlement for FY 2018-2021. The Department agrees that cost estimates may change as further studies are taken.

- CHIP2 and Satellite: NNSA's Center for Heterogeneous Integration Packaging and Processes (CHIP2) and non-proliferation satellite program will need to make adjustments because of a recent Committee on Foreign Investment in the United States (CFIUS) decision that did not block a business transaction resulting in the control of a specific U.S. business by a foreign entity. This will result in NNSA needing to identify alternative material sources for CHIP2 to endure stockpile and interoperable warheads and mitigate potential loss of trusted foundries. The OMB proposed settlement acknowledges these requirements but does not provide any funding FY 2018-2021. NNSA estimates that the cost of alternatives will be at least $250 million over FY 2018-2021.

- W80-4: NNSA has proposed to reduce its planned FY 2017 funding for the W80-4 Life Extension Program (LEP) by $90 million due to delays in starting the program in FY 2016 as a result of the 3 month continuing resolution. This should result in significant carryover funding to FY 2017. The proposed OMB settlement asked NNSA to reaffirm that it will meet the commitment to DOD and the Air Force to have a first production unit (FPU) by FY 2025 at the reduced FY 2017 funding request. NNSA still anticipates meeting the planned FPU target date, with modest increased risk, contingent on there not being future substantial resource constraints. NNSA will continue to work with the Air Force through the Nuclear Weapons Council to align and fully integrate the LRSO program and to resource it adequately in the FY 2018-2021 funding period.

- Other: There are a number of other important programmatic requirements either not funded or with insufficient funding in the out-years as a result of topline constraints. These include funding for the Albuquerque Facility to house nearly 1,000 Federal employees currently working in mostly 1940s and 1950s facilities in New Mexico; technology development and maturation to support the life extension programs; surveillance programs; Perimeter Intrusion Detection and Assessment Systems (PIDAS); and other defense program infrastructure projects. In some cases, NNSA still needs to

better define cost estimates for these programs. Not identifying any funding towards key projects in the budget provides an impression that full scope is funded.

We are requesting an upwards adjustment of $5.2 billion over FY 2018-2021 to fund the Administration's goals and priorities. Failure to address these requirements in the near term will put the NNSA budget in an untenable position beginning in FY 2018, will not provide an appropriate statement of the Obama Administration legacy, and will provide a misleading marker to the next Administration as to the resource needs of the nuclear security enterprise.

Sincerely,

Ernest J. Moniz

cc: The Honorable Ashton Carter
Secretary of Defense

The Honorable Susan Rice
National Security Advisor

WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING

SEPTEMBER 7, 2016

RESPONSES TO QUESTIONS SUBMITTED BY MR. COOPER

Mr. SMITH. Any time a project has an extremely long execution phase there must be a comprehensive plan for the maintenance of equipment and systems prior to the point at which these items are turned over to the end users for testing and then production. As part of the UPF project, we will budget for and implement plans to perform this execution phase maintenance. Once the facility is turned over to Y–12 operations, maintenance of UPF will become part of the site's overall maintenance program and be covered by other budgeting mechanisms (as the project will have completed at that point). To that end, the UPF-generated Concept of Operations plan provides guidance and expected staffing needs and the UPF-generated maintenance analyses outlines preventative maintenance programs and anticipated corrective maintenance needs. Those will be combined into anticipated maintenance staffing needs for operation that are outside the Future Years Nuclear Security Plan (nine years away), but they are being identified for future budgeting that will come from the facility's operating funds. However, without intentional focus and budgeting, the situation can occur where budget tradeoff decisions will lead to less than optimal maintenance of the new facility as new facilities do not have a commensurate long-term maintenance funding profile in the same manner as they have for new construction. [See page 12.]

General KLOTZ and Mr. MCCONNELL. The Fiscal Year (FY) 2017 President's Budget Request includes $200 million for NNSA to transfer the Kansas City Bannister Federal Complex to a private developer for demolition, remediation, and redevelopment. The private developer has a significant advantage over NNSA in that it can assume responsibility of the property and remediate to a specific, industrial end-use. If NNSA were to maintain ownership of the property, NNSA would be required to return the property to a much higher level of remediation suitable for any future use, due to a lack of intended end-use of the property. Estimates suggest it would take NNSA more than a decade to achieve this more intensive level of remediation and would cost roughly $1 billion. Therefore, the estimated savings to the government in transferring the property on-time could be as much as $700 million. [See page 21.]

RESPONSES TO QUESTIONS SUBMITTED BY MR. GARAMENDI

Dr. MCMILLAN. Yes, I would be happy to brief you and your staff on our comprehensive infrastructure plans. NNSA has a new process and system for development of the Future Years Nuclear Security Plan (FYNSP) and that new process should produce a product in the beginning of the next calendar year. I would be happy to provide that information to you once it has been finalized. [See page 13.]

General KLOTZ. As requested, NNSA is providing copies of the most recent Ten-Year Site Plans (TYSP) that were completed in Fiscal Year (FY) 2015 by each of NNSA's eight sites. The TYSPs are created by the M&O contractor at each of NNSA's eight sites to convey the site's current and future infrastructure needs. Starting in FY 2017, the TYSPs will be replaced by a new, enterprise-wide, integrated, strategic infrastructure planning document called the Master Asset Plan (MAP). During Calendar Year 2016, NNSA is conducting Infrastructure Deep Dives at each NNSA site. The MAP and Deep Dives identify program requirements, infrastructure gaps and risks to meeting those needs, and proposed solutions to accomplish the long-term infrastructure vision. As of September 30, 2016, six of eight Deep Dives have been completed. The final two will be completed by early November. The first MAP is scheduled for release in March of 2017 in conjunction with the FY 2018 President's Budget Request. [See page 24.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

SEPTEMBER 7, 2016

QUESTIONS SUBMITTED BY MR. ROGERS

Mr. ROGERS. Please provide the committee unclassified pictures of the most significant infrastructure challenges and degradations at your sites.

Mr. SMITH. [No answer was available at the time of printing.]

Mr. ROGERS. Please describe the impacts of your sites' infrastructure challenges on your ability to attract, retain, and motivate workers? What are the impacts to morale?

Mr. SMITH. There's no doubt that attracting and retaining the next generation of great workers becomes more challenging in facilities that are in a deteriorated state. Our workers experience the infrastructure challenges every day and are vigilant in their efforts to perform to the highest standards while often working in facilities that are less than ideal and are the subject of frequent repairs and outages. Furthermore, many of our workers have had life-long careers at the sites and for them, keeping the sites going is truly a service to the nation with a knowledge of the past difference these sites have made. Projects like the Jack Case Center and New Hope Center at Y–12, the Highly Enriched Uranium Materials Facility at Y–12, and the Administrative Support Complex and the High Explosives Pressing Facility at Pantex go a long way toward addressing morale issues, but it is no doubt a challenge to recruit top talent while competing against industries that can provide better facilities with modern safety, security, and work environment amenities. Still, the excitement at the groundbreaking for the Pantex Administrative Support Complex in August was palpable, and it's very apparent that employees are excited to work in a state-of-the-art facility that is commensurate with the importance of their jobs to national security.

Mr. ROGERS. If provided increased top-line funding to support it, would you favor a new FIRP-like program aimed specifically at dealing with deferred maintenance and infrastructure challenges? How would you suggest such a program set priorities?

Mr. SMITH. Significant reductions in deferred maintenance will not be realized without continued investment strategies. We are actively establishing priorities and addressing deferred maintenance to continue mission work, but that is not enough. The Facilities and Infrastructure Recapitalization Program had a lot of success reducing deferred maintenance at Pantex and Y–12, and similar to the FIRP Program, a significant additional annual investment above current funding levels is required to reduce deferred maintenance at both sites. Until this is done, there will be periodic disruptions to mission accomplishment while unplanned emergent items are dealt with and impacts on production are subsequently addressed through recovery schedules and worker overtime whenever possible. Current funding levels presently allow us in many areas only to treat the symptoms of age rather than address the fundamental degradation. Such a program could set priorities using guidelines that are already used at both sites: How essential is a given capability for the site. Because of limited funding, we are already forced to make very difficult decisions every single day about where to devote funding, and examining how essential a given capability is helps to prioritize where to spend money. While all capabilities are important, certain capabilities are more inextricably linked to mission requirements and should be prioritized over other functions, with those considered mission critical at the top of the list. Fortunately, along with Lawrence Livermore National Laboratory, Pantex and Y–12 have piloted a software program for the NNSA designed to better track and manage building infrastructure maintenance that will help us make better prioritization decisions. The sites were designated as BUILDER Centers of Excellence in 2013 by NNSA and are in the process of implementing the U.S. Army Corps of Engineers' BUILDER Sustainment Management System. The program will work with existing management tools like G2 and is designed to let managers proactively respond to infrastructure maintenance needs, and when complete, Pantex's 620 facilities and Y–12's 345 buildings will be integrated in the program.

Mr. ROGERS. Please provide the committee unclassified pictures of the most significant infrastructure challenges and degradations at your lab.

Dr. MCMILLAN. [The photos are retained in the subcommittee files.]

Mr. ROGERS. Do you believe we currently have a "responsive infrastructure" in our nuclear security enterprise? How would you define this term? If given direction and resources by the President and Congress, do you believe that NNSA's enterprise produce and deploy to the military a nuclear weapon in 5 years? In 10 years?

Dr. MCMILLAN. Some elements of the current Nuclear Security Enterprise (NSE) infrastructure are responsive, but there are others that are not. I define responsive infrastructure as how well the infrastructure we have can respond to new scope/mission deliverables. For this definition, responsiveness is measured in terms of the time required to respond. Responding to new scope/mission deliverables would involve execution across three essential elements: facilities, technical/scientific tools, and people. Facilities: NNSA has significant efforts underway to invest in critical infrastructure for the future of the Enterprise, in particular with efforts for the Uranium Processing Facility (UPF) at Y–12 and the Plutonium Strategy at Los Alamos. To create a truly responsive infrastructure, it will be essential for Congress and the Administration to continue support for these and other critical capabilities over the next decade. Technical/scientific tools: For the Enterprise to succeed, it will require significant investments to build upon the success of the first 20 years of Stockpile Stewardship. As a nation, we need to build upon our earlier success to establish the next generation of both experimental and computing tools so that we can continue to certify the stockpile. People: The infrastructure and tools are irrelevant without the right people with the right experience; their expertise and state of readiness to perform certain types of work is dependent on the degree to which their skills have been exercised in critical and necessary areas. It takes more than a decade to "grow" design expertise and this expertise must be exercised and challenged constantly to retain competency. NNSA and the labs are exercising these people today through the Life Extension Programs and other efforts such as the Foreign Nuclear Weapons Intelligence program. Despite this body of work, gaps do remain and we will need to continue to work to exercise the full set of skill sets across the Enterprise. To your question of being able to produce and deploy a weapon, I believe that given today's Enterprise, with military requirements and focused application of NNSA resources, it would be technically possible for the NNSA Enterprise to produce the first production unit of a nuclear weapon that is essentially equivalent to those in the existing stockpile within 10 years. It is important to note, however, that this statement is true today only because the Enterprise has had nearly 15 years of ongoing exercise through the Life Extension Programs. This state of responsiveness was not the case in the mid-to late-1990s when significant atrophy of capability had occurred. The W88 Alt. 370, although limited in scope, is an example of the Enterprise's ability to respond relatively quickly to a stockpile interest. Again, this was made possible by the fact that the Enterprise was able to build upon capabilities and expertise developed and honed through the execution of the W76 and now the B61–12 LEPs. With the Alt. 370, Los Alamos and the Enterprise had to quickly respond to a new set of expanded requirements in a compressed timeframe. On the one hand, the Alt. 370 shows we can be responsive, but it also suggests that the Enterprise would be very challenged to produce weapons in significant quantities (the question asks about producing one), or weapons that are different from those in the stockpile. Additionally, it is unknown how the Enterprise would respond if this new requirement was simply overlaid on top of the work that is already in progress since several areas of the Enterprise are fully committed to the program of record. Additionally, I would highlight for the Committee the unique challenges of nuclear components where response time to bring new infrastructure online is routinely measured in decades.

Mr. ROGERS. Please describe the impacts of your lab's infrastructure challenges on your ability to attract, retain, and motivate workers? What are the impacts to morale?

Dr. MCMILLAN. The Laboratory works hard to attract and retain the best and brightest workforce, and we are mindful that we are recruiting in a very challenging environment, competing against other laboratories and tech giants in Silicon Valley and elsewhere. We typically succeed when we can demonstrate how recruits will be able to work on complex scientific and technical challenges, and have access to state-of-the-art experimental and supercomputing tools. Workers can become demotivated quickly, however, as a consequence of residing in spaces that are in poor condition, buildings with systems that break down frequently, and areas in which repairs are protracted or take a long time to commence. When I testified before the Committee, I talked about the challenges of recruiting new postdocs and scientific staff to subpar space—just recently a postdoc relayed his frustration about the air conditioning in his office not working in the heat of the summer. Even some of our most distinguished scientists work in subpar environments every day. In the weeks following the hearing, I was visiting one of our senior scientists in his labora-

tory space. The researcher had just been named the winner of the prestigious American Physical Society (APS) Herman Feshbach prize, a significant and highly prestigious recognition from the international scientific community. I was troubled to see when I sat in his conference room that the ceiling tiles were stained from water leaks and as I took a phone call in his administrator's office, I saw rodent traps deployed. Staff morale is also impacted by the pace at which infrastructure upgrades can be made. Los Alamos works to efficiently invest funds from NNSA and our internal site support budgets to address infrastructure issues. At the same time, the scale of the Laboratory, and the age of our facilities makes it impossible to get to everything at the pace that we would like to.

Mr. ROGERS. If provided increased top-line funding to support it, would you favor a new FIRP-like program aimed specifically at dealing with deferred maintenance and infrastructure challenges? How would you suggest such a program set priorities?

Dr. MCMILLAN. Yes, if new top-line funding were made available to support a new FIRPlike program, we would agree that it would be a good thing for the Enterprise. Priorities should be set following the NNSA approach: elimination of unneeded facilities; and improved maintenance for facilities that support all mission sets at the national security laboratories, plants, and the Nevada National Security Site.

Mr. ROGERS. Have you noticed any impact on your ability to attract, retain, and motivate workers since the move to your new facility? To morale? Do you have any concrete data on this that you can provide to the committee?

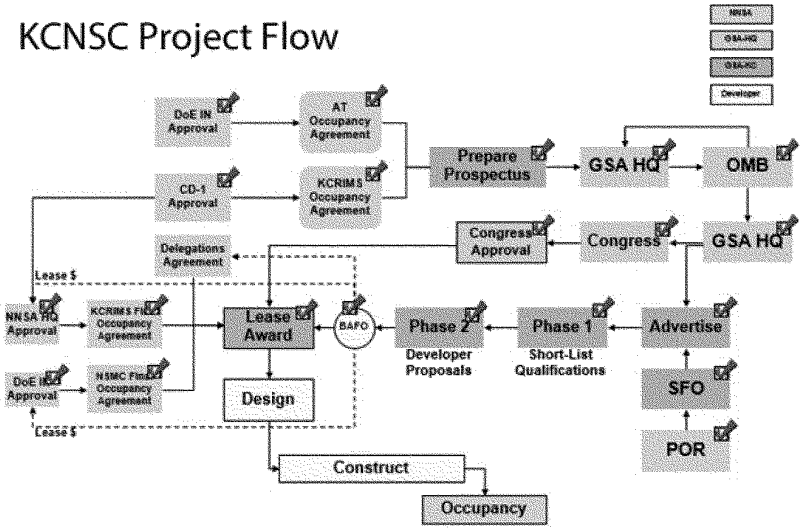
Mr. RICCIARDELLI. One of the most exciting, and most visible, aspects of our transformation was our new state-of-the-art LEED® Gold-rated manufacturing and engineering facility. The Kansas City National Security Campus's (KCNSC) unique design features give this building a high-tech look with an environmentally-friendly presence. The award winning design establishes a workplace that inspires and encourages collaboration, while celebrating our manufacturing and engineering culture.

A comprehensive Culture and Motivation communications plan was deployed to ensure employees were informed and engaged throughout the move. Engagement survey results showed 71% felt change was important to our success. Following the move, a survey was conducted and 97% of respondents agreed that overall, they were satisfied with their move experience. Employee engagement survey scores increased 13% from 2012 to 2014 (there was no survey conducted in 2015). Honeywell also conducts positive employee relations surveys annually, and the Kansas City location scores have increased on 19 of 20 questions since 2013 with some of the biggest increases in pride (up 6%) and job security (up 11%).

Significant time and effort has been invested in our talent pipeline and recruiting the critical skills needed to accomplish the NNSA mission. We are confident the new facility creates an atmosphere in which people feel valued and inspired. Although the attrition rate at KCNSC has remained fairly constant overall, we have been experiencing lower professional/managerial turnover since moving into the building than we did in the year leading up to it.

Mr. ROGERS. Please describe the process that your company and NNSA went through to build the new Kansas City National Security Campus. This was a pretty unique project for NNSA in that it was both a public-private partnership and it totally replaced an NNSA site, moving it to a new building and an entirely new location. What lessons were learned during this process? How are you helping NNSA share and apply these lessons across the enterprise?

Mr. RICCIARDELLI. The process used was a combination of the DOE O 413.3B process for the acquisition of capital assets and the GSA government lease process using third-party financing as shown below.



Key in this process was cooperation between NNSA and GSA where project approval was granted by NNSA through Critical Decision-1 (CD–1) of the DOE O 413 process in combination with OMB and Congressional approval through the GSA prospectus process. The requirements for the site were assembled by NNSA in the Program of Requirements document and those requirements were bid by private developers through the GSA Solicitation for Offer. Not shown in the diagram above is the National Environmental Policy Act process requirements that were followed in parallel. This process currently cannot be used on federally owned real estate due to federal statutes. Because the project assets are privately owned, the new site produces property tax revenues and therefore local tax incentives were sought and applied.

The construction and occupancy projects were largely separated. Although occupancy wasn't technically a capital acquisition project, DOE O 413 provided the process framework and was used to provide program controls to execute the entire occupancy project which had little direct GSA involvement. Tenant improvements at the site were also separated with some being provided as part of the lease according to GSA standards, while tenant improvements unique to NNSA's mission were funded directly by NNSA outside of the lease.

The project team captured nearly 300 lessons learned from the eight year project and continues to share these lessons with other major projects within NNSA including the Uranium Process Facility at Y–12 and the Administrative Office Building at Pantex that are currently in work. Perhaps the most significant lesson learned is that NNSA can use its own real estate and third party financing authority to accomplish similar projects without complex integration that is needed to partner with GSA.

Mr. ROGERS. Do you believe we currently have a "responsive infrastructure" in our nuclear security enterprise? How would you define this term? If give direction and resources by the President and Congress, could NNSA's enterprise produce and deploy to the military a nuclear weapon in 5 years? In 10 years?

General KLOTZ. A responsive nuclear infrastructure is one that reflects the resilience of the nuclear enterprise to unanticipated challenges or emerging threats, and the ability to anticipate innovations by an adversary and to counter them before our deterrent is degraded—all while continuing to carry out the day-to-day activities in support of the stockpile. Elements of a responsive infrastructure include the people, the science and technology base, and the facilities and equipment needed to support a right-sized nuclear weapons enterprise designed to maintain a safe, secure, and effective nuclear weapons stockpile. The 2010 Nuclear Posture Review identified key capabilities required of a responsive nuclear infrastructure. NNSA's Uranium Strategy and Plutonium Strategy were developed to address several of these key capabilities, including plans to address infrastructure issues. A number of critical investments, including the Uranium Processing Facility (UPF) and the Chemistry and Metallurgy Research Replacement (CMRR) Project, are currently underway to sup-

port the continued execution of these key capabilities. Both projects will move operations from degraded facilities into newer buildings, increasing the responsiveness of the enterprise. Additionally, investments in other capability areas such as tritium, lithium, and microelectronics production are either planned or budgeted. Alongside these production capabilities, NNSA also invests in nuclear weapon research, development, testing, and evaluation (RDT&E). Initiatives like Exascale computing will advance predictive modeling of weapon systems, aiding in qualification and experimental design. These capabilities support continuing stockpile certification and support responsiveness by enabling certification of changes to the stockpile. Much of NNSA's infrastructure is old and brittle and we are making key investments to ensure the complex is able to be responsible to its national security missions. More than 50 percent of NNSA's facilities are over 40 years old, nearly 30 percent date to the Manhattan Project era, and failures are increasing in frequency, severity, and unpredictability. These failures require funding for correct maintenance that could otherwise be invested in infrastructure modernization activities to further improve the responsiveness of NNSA's infrastructure. There are, however, a number of investments that are underway to address key infrastructure requirements. Current and future support to readiness and responsiveness is provided through NNSA investment in vital general purpose infrastructure projects such as the TA–3 Substation Replacement project at Los Alamos National Laboratory. The project, which began in FY 2016, will replace a degraded and increasingly unreliable system with a modern, reliable, and more robust system that is easier and more cost effective to maintain and operate. The new substation will reduce deferred and emergency maintenance, improve safety, and upgrade and increase power import capacity to support new programs. By 2025, NNSA will have developed and deployed to the military three life-extended warhead systems (W76–1, B61–12, and W88 Alt 370.) The average time from NWC authorization of Phase 6.2/6.2A (Feasibility Study and Option Down-Select/Design Definition and Cost) to First Production Unit (FPU) has been between 9–11 years for these programs, with design complexity, funding, administrative regulations, and technical challenges driving the time range. The actual time to complete a program depends on the complexity of the work, the quantity to be produced, and the amount of funding appropriated. Although each of these programs has experienced delays due to funding and scope alterations, the enterprise has shown an improving trend in execution. Continued investment in infrastructure and equipment is needed to increase this trend. The 2010 Nuclear Posture Review states: "The United States will not develop new nuclear warheads. Life Extension Programs will use only nuclear components based on previously tested designs, and will not support new military missions or provide for new military capabilities." However, should a scenario arise where a new mission or capability was required, coupled with National will, Executive backing, and Congressional funding, the time to produce a weapon would likely be significantly reduced. Without continued and predictable modernization investment, NNSA's ability to meet the challenges of unanticipated world events will be reduced.

Mr. ROGERS. How does the state of NNSA's infrastructure impact its readiness and responsiveness to react to changes in programs and mission needs?

General KLOTZ. A responsive nuclear infrastructure is one that reflects the resilience of the nuclear enterprise to unanticipated challenges or emerging threats, and the ability to anticipate innovations by an adversary and to counter them before our deterrent is degraded—all while continuing to carry out the day-to-day activities in support of the stockpile. Elements of a responsive infrastructure include the people, the science and technology base, and the facilities and equipment needed to support a right-sized nuclear weapons enterprise designed to maintain a safe, secure and effective nuclear weapons stockpile. As stressed in the 2010 Nuclear Posture Review, NNSA's infrastructure must be able to not only support the work we currently have planned, but respond to technical challenges and geopolitical surprises. Following Congressional direction provided in the National Defense Authorization Act for Fiscal Year 2016, NNSA is carrying out a Stockpile Responsiveness Program in order to identify, sustain, enhance, integrate, and continually exercise all capabilities required to conceptualize, study, design, develop, engineer, certify, produce, and deploy nuclear weapons. This program looks for potential future gaps in the deterrent in conjunction with the DOD and exercises everything from design to testing in a substantially compressed timescale. NNSA continues to maintain a safe, secure, and effective nuclear weapons stockpile while being responsive to the nation's current nuclear security needs. That said, more than 50 percent of NNSA's nuclear infrastructure includes facilities that are over 40 years old, and almost 30 percent date to the Manhattan Project. Life Extension Programs and weapons dismantlement, coupled with the normal stockpile stewardship activities, have increased the demand placed upon this infrastructure. Without significant, sustained, and predict-

able modernization investment, the risk to NNSA's ability to meet the challenges of unanticipated world events while maintaining the nuclear weapons stockpile safe, secure, and effective will increase. Further, in order to sustain the nuclear deterrent over the long-term, NNSA requires reliable and modern programmatic, security, and general purpose infrastructure that not only provides for today's capabilities, but allows for the opportunity to expand future capacities.

Mr. ROGERS. What is your view of the impact of sites' infrastructure challenges on NNSA's ability to attract, retain, and motivate highly-skilled workers? What are the impacts to morale?

General KLOTZ. To attract and retain a workforce capable of performing NNSA's missions to the highest standards, NNSA must compete with companies and universities that have state-of-the-art facilities, the latest technologies, and modern work environments. Recruitment is a challenge with degraded, and in certain places obsolete infrastructure and equipment. NNSA facilities continue to experience infrastructure related failures (e.g., power outages, inadequate heating/cooling, and deficient IT/communication services). This results in workforce disruptions and personnel moves to perform infrastructure upgrades or repairs to restore the basic necessities. NNSA workers often work through infrastructure and equipment deficiencies in order to meet today's mission deliverables. However, if infrastructure improvements are not demonstrated across the NSE to attract and retain highly-skilled workers and improve working conditions and efficiencies, then NNSA is at risk of being unable to meet national security requirements in the future. NNSA has implemented a project prioritization methodology that identifies the most pressing infrastructure investments that reduce the highest risks including workforce ability to deliver mission.

Mr. ROGERS. What projects not currently underway is NNSA considering that could leverage public-private partnerships?

General KLOTZ. As part of our improved project management initiatives, NNSA implements a comprehensive Analysis of Alternatives (AOA) process to identify the most cost- effective approach for each mission need. NNSA uses public-private partnerships when an AOA determines it appropriate. Currently, Los Alamos National Laboratory, Lawrence Livermore National Laboratory and Sandia National Laboratories are seeking new facilities including high-performance computing facilities and experimental facilities.

Mr. ROGERS. If provided increased top-line funding to support it, would you favor a new FIRP-like program aimed specifically at dealing with deferred maintenance and infrastructure challenges? How would you suggest such a program set priorities?

General KLOTZ. The establishment of the Office of Safety, Infrastructure, and Operations in January 2015 along with our current budget structure—approved by Congress for Fiscal Year (FY) 2016—provides NNSA with flexibility necessary to respond to emergent needs. Within the Office of Safety, Infrastructure, and Operations, NNSA has two FIRP-like programs that address deferred maintenance:

- Maintenance and Repair of Facilities; and
- Recapitalization: Infrastructure and Safety.

Sustained, predictable, and increased investments in these two programs are needed to improve the condition of NNSA infrastructure and reduce deferred maintenance. NNSA has a project prioritization methodology that prioritizes annual investments by evaluating key criteria. Criteria evaluated include deferred maintenance reduction, program requirements, safety and programmatic risk reduction, and increases in operational efficiency and/or productivity.

Mr. ROGERS. How does NNSA measure its backlog of deferred maintenance? What metrics are used and how is the term defined? Does NNSA have a rigorous and well-documented means of measuring this?

Mr. MCCONNELL. NNSA determines deferred maintenance based on condition assessment surveys. Deferred maintenance is defined by the Federal Accounting Standards Advisory Board (FASAB) as: Maintenance and repairs that were not performed when they should have been or were scheduled to be and which are put off or delayed for a future period. The determination of acceptable condition may vary both between entities and among sites within the same entity. Management shall determine what level of condition is acceptable. NNSA has worked with representatives from NNSA sites to amplify guidance to standardize reporting of deferred maintenance across all NNSA sites. The implementation guidelines are documented and released annually in the Office of Safety, Infrastructure, and Operations' Program Management Plan (PMP). NNSA continuously seeks to improve its information on deferred maintenance to ensure accuracy and consistency across NNSA's enterprise. In 2016, NNSA is using this standardized approach to revalidate information on the condition of infrastructure and the assessment of deferred maintenance

and repair needs to ensure accuracy and consistency across NNSA's enterprise. The results will not be available until after the fiscal year ends, but NNSA expects that this will result in some amount of deferred maintenance being reclassified as other repair needs, so there will be a one-time administrative reduction to the current deferred maintenance total.

Mr. ROGERS. NNSA's budget request says it will halt the growth of the $3.7 billion backlog of deferred maintenance across the nation's nuclear security enterprise, which is an improvement on decades of increasing backlog. But for the second year in a row it would not decrease that backlog. What are the risks to safety and to NNSA's mission of continuing to operate in these facilities?

Mr. MCCONNELL. In Fiscal Year (FY) 2016, NNSA will halt the growth of deferred maintenance, and the FY 2017 budget request, if fully supported, will allow NNSA to begin reducing deferred maintenance and arresting the decline of infrastructure by:

- Increasing funds for recapitalization and maintenance efforts;
- Disposing of excess facilities;
- Increasing buying power via strategic procurement of common building systems across the enterprise (e.g., roofs, HVAC); and
- Improving project management capabilities to make risk informed investment decisions.

NNSA's capability to achieve its programmatic goals is dependent upon safe and reliable infrastructure. However, much of NNSA's infrastructure is degraded and the condition of nearly two-thirds of NNSA's infrastructure is less than adequate to meet mission needs. As a result, infrastructure failures are increasing in frequency, severity, and unpredictability. This poses an increasing safety and programmatic risk to NNSA. Facility and equipment failures either impact the mission directly or impact our ability to ensure safe and secure operations. In the latter case, NNSA and our M&O contractors take action to put operations in a safe and secure condition. This usually includes suspending operations, which results in mission impacts.

Mr. ROGERS. Does NNSA have metrics or ways to measure the inefficiencies or costs that are being borne because of these old buildings and this large backlog of deferred maintenance? Please provide a rough order of magnitude estimate.

Mr. MCCONNELL. NNSA is investigating new measures to give greater insight into the costs and inefficiencies caused by the declining state of infrastructure.

Mr. ROGERS. How does NNSA prioritize between preventative maintenance and recapitalization? How does it judge when to continue preventative maintenance versus when a building requires demolition and a full-rebuild?

Mr. MCCONNELL. NNSA is deploying a number of new management tools to improve our ability to make data-driven, risk-informed investment decisions to address infrastructure challenges. One such tool, BUILDER, is a web-based software developed by the U.S. Army Corps of Engineers that enables decisions concerning when, where, and how to best maintain, repair, and recapitalize infrastructure. The tools and processes serve as a guide and are not intended to replace expert analysis informed by program integration. A primary consideration of when a building requires demolition and replacement is when a facility can no longer house the intended capability or mission need.

Mr. ROGERS. Please provide the committee a comprehensive list of currently unfunded infrastructure and deferred maintenance projects that NNSA could execute in the next several years, if provided increased resources.

Mr. MCCONNELL. As requested, NNSA is providing a list of currently unfunded Recapitalization projects that NNSA could execute in the next several years should additional resources be available. The list provided is unconstrained and builds from the project list included in the NNSA Fiscal Year 2017 President's Budget Request.

National Nuclear Security Administration
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
1	LLNL	Site 300 Electric Utility Display System Upgrade	$7,000
2	LANL	LANSCE Sector A Tunnel Fire Suppression System Installation	$3,000
3	LLNL	B132N HVAC System Variable Air Control Replacement	$5,000

National Nuclear Security Administration—Continued
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
4	Y–12	Bldg 9204–2E Wet Pipe Systems 1&2 50 Year Sprinkler Head Replacement	$5,500
5	Y–12	Bldg 9995 Air Handling Unit (AHU) 2000 Replacement	$6,000
6	Y–12	Area 5 15 kV Underground Cable Replacement	$5,000
7	KCP	Kirtland Ops NC–135 Site Disposition	$4,900
8	LLNL	Bldg 175 Characterization	$1,500
9	Y–12	Bldg 9204–2 Ceiling Concrete and Steel Inspection and Replacement	$6,000
10	PX	Bldg 12–84E Generator Replacement	$2,000
11	KCP	Bldg 2 Specialty Welding Applications Capital Equipment Replacement & Upgrade	$1,200
12	LANL	PF–4 Vault Storage Renovation	$7,500
13	LLNL	Utility Safety Upgrades to Plating Shop, B322	$2,500
14	SNL	C914 Seismic Upgrades to Achieve Code Compliance	$9,720
15	LLNL	Bldg 292 Characterization	$2,000
16	LLNL	Site 200 and 300 Transition and Disposition of 48 Trailers	$2,500
17	SNL	SNL-Hawaii Mt. Haleakala Disposition of 3 Facilities	$934
18	LLNL	Site-Wide Low Conductivity Water System Station/Cooling Tower Replacement	$6,000
19	LLNL	S200 Failing Underground Utility Valves & Water Distribution Piping Replacement	$5,000
20	PX	Building 12–84E Generator Replacement	$2,000
21	SNL	C912 Major Building Renovation, Phase 3	$5,000
22	LLNL	B131 Engineering's Cornerstone Office Building Upgrade	$7,500
23	KCP	Product Testing Area Capital Equipment Replacement	$2,490
24	SNL	Substation 5 Loop Upgrade, Redundant Feeder Installation	$5,000
25	Y–12	9204–04 Deinventory	$8,000
26	PX	Bldg 12–24E Chiller Replacement	$2,000
27	LANL	Small Improvement Project in 3 Facilities (53–003,22–0005, 03–0039)	$1,300
28	LLNL	B805 Classified Machine Shop Infrastructure Renovation	$3,500
29	LANL	CMR Initial Facility Closure, Wing 2,3,5 and 7 Clean Up	$1,500
30	LLNL	B327 Non-Destructive Evaluation Laboratory Renovation	$2,500
31	LLNL	B391 HVAC Water Temperature Control Upgrade	$3,000

National Nuclear Security Administration—Continued
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
32	Y–12	Re-line Failing Sections of Sitewide Potable Water Distribution Piping	$8,000
33	LANL	TA–03–0102 Component Manufacturing Virtual Vault Type Room Installation	$1,599
34	KCP	Production Area Renovations for Floor Space Optimization	$2,143
35	LLNL	Disposition of Buildings B326, B221, & B221 Retention Tanks	$2,000
36	SNL	C911 Renovation to Convert Office to Lab Space	$5,000
37	PX	Bldgs 12–85 and 12–96 UPS Replacements	$2,250
38	PX	Bldg 12–44 UPS Replacement & Equipment Room Reconfiguration	$3,000
39	PX	Bldg 11–51 Generator and UPS Replacement	$2,250
40	PX	Bldgs 12–98E1 and E2 UPS and Generator Replacement	$3,000
41	LANL	Weapons Engineering Tritium Facility Glovebox and Systems Renovation	$8,250
42	Y–12	Bldg 9720–82 (HEUMF) VESDA Installation	$5,000
43	Y–12	9204–2E Criticality Accident Alarm System (CAAS)	$4,500
44	LANL	D&D of the 100,000 gallon Single Walled Storage Tank (TA–50–90)	$2,500
45	NNSS	Atlas Machine Removal	$3,500
46	SNL	Coyote Test Field, Twin Tanks Piping Replacement	$173
47	SNL	NM High Voltage System, Overhead Switch- SW–390 Replacement	$153
48	SRS	HAOM Tritium Grab Sample Capability move to TEF	$1,400
49	SNL	Natural Gas System, Tech Area I, Piping Replacement	$1,194
50	LLNL	B332 Diesel Generator Replacement Project	$1,500
51	SNL	Bldg 960 Chilled Water System Upgrade	$2,950
52	LANL	PF–4 Fire Wall Upgrades	$7,000
53	SRS	HANM Obsolete Oxygen Monitor Replacement in Loading Line 6 Glovebox (L6–02)	$1,815
54	SRS	HANM Obsolete Oxygen Monitor Replacement in Finishing Line 6 (F6–02) Glovebox	$1,815
55	LLNL	B806/B810 High Explosives Machining/Assembly—HVAC and Electrical DM reduction and recapitalization	$4,773
56	SNL	NM Tech Area III/V, 14″ Water Main Replacement	$4,140
57	KCP	Bldg 2 Specialty Welding Applications Equipment Replacement and Upgrade	$1,136
58	NNSS	Water/Wastewater Systems—CP Hill Water Line Replacement	$7,000
59	Y–12	Bldg 9212 50 Year Sprinkler Head Replacement (Wet Pipe System 009)	$4,400

National Nuclear Security Administration—Continued
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
60	Y–12	Bldg 9204–02E Transformer, Interrupter, Switches & Underground Cable Replacement	$2,000
61	SNL	Bldg 1012—Battery Test Facility	$8,000
62	PX	Bldg 12–104A Blast Door Interlock Programmable Logic Controller Replacement	$2,000
63	Y–12	Bldg 9215 50 Year Sprinkler Head Replacement (Wet Pipe System 004)	$1,700
64	KCP	Bldg 2 Special Application Machining and Welding Area Renovations	$2,143
65	LANL	RLWTF Ground Water Permit Discharge Regulatory Requirements Mitigation (Zero Liquid Discharge Liner Replacement & Room 60 Configuration)	$8,000
66	NNSS	New Mercury Consolidated Operations Complex Building 1 (23–460)	$9,000
67	SRS	Workplace Improvements	$500
68	LLNL	B321/B322 HVAC & Electrical Replacement	$5,725
69	Y–12	Bldg 9212 Room 1022A Ventilation System Installation	$1,000
70	LLNL	Site-wide Mechanical Utility Valves and Water Distribution Piping Replacement	$5,000
71	Y–12	Bldg. 9212 302 Steam Supply Station and SF–302 Steam Coil Replacement	$1,700
72	LLNL	B132/B321A/B451 Fire Protection Systems Replacement (DM)	$4,360
73	SNL	SNL/CA Sanitary Sewer Replacements	$7,000
74	NNSS	U1a Shaft Wood Lagging Replacement	$8,100
75	LANL	PF–4 Fire Water Loop Component Replacements	$7,395
76	NNSS	U1a Public Address System Replacement	$3,000
77	KCP	Metal Tooling and Production Additive Manufacture Installation	$9,000
78	SRS	HAOM to HANM Reservoir Assessment Relocation	$6,200
79	Y–12	Bear Creek Road 13.8 kV Electrical Distribution Installation	$8,600
80	KCP	Bldgs 2 & 3 Analytical Testing and Controls Capital Equipment Replacement and Upgrade	$2,878
81	Y–12	Bldg 9204–02 Elevator #2 Replacement	$3,000
82	SNL	NM High Voltage Power System, Substation 5 Loop Redundant Feeders Upgrade	$3,180
83	NNSS	DAF Automated Energy Management System (AEMS) Replacement	$6,700
84	LLNL	B222A Nuclear Explosives Package Device Component Engineering Laboratory	$9,900
85	SNL	Bldg 878 (Process Development Lab) Renovation	$8,500

National Nuclear Security Administration—Continued
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
86	Y–12	Bldg 9204–02 50 Year Sprinkler Head Replacement (Wet Pipe System 005)	$3,800
87	Y–12	Bldg 9995 Chilled Water and Steam Condensate Piping Replacement	$3,000
88	Y–12	Bldg 9212 50 Year Sprinkler Head Replacement (Wet Pipe System 007)	$5,800
89	Y–12	Bldg 9215 Switchgear 253 Replacement	$4,000
90	LLNL	B322 Plating Shop Utility Safety Upgrades	$2,500
91	LLNL	B332 iCAM Alarm System Upgrade	$1,000
92	Y–12	Bldg 9204–02 Stab-Lok and Fused Electrical Panel Replacement	$1,900
93	LLNL	B131 High Bay HVAC Replacement	$4,390
94	Y–12	Fire and Potable Water Replacement of 9 Laterals to Nuclear Facilities	$3,000
95	LANL	SM–39 Classified Machine Shop Upgrade	$4,000
96	Y–12	Demineralized Water Delivery System Replacement	$7,500
97	Y–12	Bldg 9995 Supply Fan Replacement/Refurbishment	$5,000
98	LLNL	B805 S300 Classified Machine Shop Ventilation & Utility Renovation	$3,500
99	LANL	PF–4 Fire Water Loop Component Replacements (Pumps & Boiler Replacement)	$7,105
100	SRS	Analytical Lab Relocation From 234–H to 264–H	$3,000
101	LLNL	Site 300 Storm Water Safety Improvements & Erosion Control (Elk Ravine)	$4,925
102	NNSS	DAF Domestic Water System Upgrade	$4,700
103	NNSS	U1a Lightning Protection Upgrades	$1,900
104	LANL	TA–16–0303 Renovation for Crystal Lab Relocation	$3,000
105	PX	Bldg 12–31 HVAC and DH Replacement	$4,500
106	NNSS	DAF Electrical Substations Upgrade	$5,500
107	PX	Bldg 12–85 and 12–96 UPS Replacement and Generator Installation	$2,000
108	PX	Bldg 12–126 HVAC Replacement	$4,500
109	KCP	Bldg 2 Assembly, Electrical & Fabrication (AEF) Capital Equipment Replacement and Upgrade	$2,079
110	LLNL	B151 Renovation of 4 High Level Radiochemistry Laboratories (Anteroom renovation)	$4,655
111	KCP	Bldgs 2 & 3 Non-destructive Testing Capital Equipment Replacement and Upgrades	$2,490
112	KCP	Bldg 2 Paint and Heat Treat Capital Equipment Replacement	$2,575
113	LLNL	Sustainable Chilled and Heating Hot Water Systems Modernization	$3,000

National Nuclear Security Administration—Continued
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
114	PX	Lightning Protection System Upgrade for 10 MAA Facilities	$8,000
115	KCP	Bldgs 2 & 3 Special Materials Production and Rubber and Plastics Capital Equipment Replacement and Upgrade	$2,986
116	PX	Bldg 12–98 UPS Replacement and Generator Installation	$3,000
117	KCP	Bldgs 2 & 3 Environmental Testing and Controls Capital Equipment Replacement and Upgrade	$2,754
118	LANL	TA–53–0003 (LANSCE) Fire Suppression System in Accelerator Tunnel Installation	$5,800
119	LLNL	B170 Upgrade Classified Computing and Communications	$2,500
120	PX	Bldg 11–55 UPS & Generator Replacement	$2,000
121	KCP	Bldgs 2 & 3 Paint & Heat Treat and Rubber and Plastics Area Renovations	$1,654
122	LANL	Firing Sites Confinement Vessel Building Construction	$8,750
123	PX	Bldg 12–104A Uninterruptible Power Supply Replacement	$1,500
124	KCP	Bldgs 2 & 3 Assembly, Electrical & Fabrication and Environmental Testing Area Renovations	$2,289
125	PX	Bldg 12–99 UPS Replacement	$1,500
126	PX	Bldg 12–94 UPS Replacement	$1,500
127	KCP	Bldgs 2 & 3 Process Marking and Printing Applications Capital Equipment Replacement and Upgrade	$2,785
128	PX	Bldg 12–121 OMI & BDI Controller Replacement	$4,000
129	PX	Bldg 12–104 Blast Door Interlock PLC Replacement	$4,000
130	PX	Bldg 12–86 Uninterruptible Power Supply Replacement	$1,500
131	PX	Bldg 12–130 Generator and UPS Replacement	$1,500
132	PX	Bldg 12–121 UPS Replacement	$1,250
133	NNSS	Mercury Sewer Lines Replacement	$8,450
134	LLNL	Bldg 28XX Complex Disposition of 4 trailers	$2,500
135	Y–12	Bldg 9201–05 Deinventory	$20,000
136	Y–12	Bldg 9202–04 Deinventory	$1,000
137	LANL	TA–16–0306 Characterization	$2,000
138	NNSS	Mercury Bldgs 23–517 & 23–B, 23–C, 23–D Disposition	$2,000
139	NNSS	Mercury Disposition of 10 facilities	$2,400
140	SRS	Bldg 236–H shutdown	$2,000

National Nuclear Security Administration—Continued
Infrastructure and Safety
Over Target FY 2017 Recapitalization Projects–October 2016

Rank	Site	Project Name	Total Project Cost ($K)
141	PX	Bldg 11–029 Shutdown	$2,600
142	LLNL	Bldg 363 Biomedical Laboratory Disposition	$1,000
143	NNSS	Area 6 Disposition of 5 facilities	$1,000

Mr. ROGERS. Please provide us a summary of the FIRP program, what it accomplished, and how much it cost. How did FIRP set priorities? Why was FIRP terminated?

Mr. MCCONNELL. NNSA successfully completed the Facilities and Infrastructure Recapitalization Program (FIRP) in 2013. FIRP was created to reduce a substantial accumulation of backlogged facility maintenance, repair, and demolition projects across NNSA's eight sites. Among its achievements, FIRP:

- Executed nearly 800 projects throughout the NNSA enterprise;
- Eliminated $900 million of baselined deferred maintenance and brought the overall condition of the enterprises' essential facilities up to industry standards;
- Managed 625 recapitalization projects ($1.2 billion) that refurbished laboratory and production facilities, repaired or replaced electrical and mechanical equipment, utility lines, fire protection, power and lighting systems, roofs, roads and other vital infrastructure; and
- Oversaw 145 disposition projects which removed 3.5 million square feet of excess footprint, opened many acres of space for redevelopment, shrank security perimeters and reduced deteriorated condition.

In total, FIRP was funded over $2 billion to address NNSA infrastructure needs (averaging about $160 million per year). FIRP was terminated in 2013 in accordance with its sunset date of the initial legislation. However, the Office of Safety, Infrastructure & Operations maintains authorities of FIRP.

Mr. ROGERS. Can you quantify for us how much of the $3.7 billion backlog in deferred maintenance must get fixed directly, and how much is attached to facilities that will be torn down? How does NNSA delineate between real, concrete requirements for deferred maintenance dollars at enduring facilities versus requirements at excess facilities?

Mr. MCCONNELL. As of the end of Fiscal Year (FY) 2015, NNSA's deferred maintenance on operating facilities totaled approximately $2.8 billion. The remaining balance is deferred maintenance on excess facilities and facilities to be excessed within ten years. A breakout is provided below.

NNSA Deferred Maintenance (DM) as of FY 2015
(dollars in thousands)

Total DM	$3,667,183
DM on excess facilities	$497,216
DM on facilities to be excess in 10 years	$354,920

Once a facility becomes excess, the majority of deferred maintenance is removed because NNSA no longer needs to conduct that maintenance as the facility is no longer needed for mission work. However, deferred maintenance will remain and/or accumulate on any systems required to maintain the facility in a safe, shutdown condition, such as fire suppression systems.

Mr. ROGERS. How does NNSA allocate its general maintenance funding? Does it choose particular projects, or does it allocate based on a site's deferred maintenance backlog figure?

Mr. MCCONNELL. To support the annual budget request process, NNSA conducts a disciplined programming process by integrating budgets across portfolios to ensure maintenance investments are consistent with, and support the other programmatic work of the NNSA enterprise. The majority of NNSA's maintenance work consists of recurring day-to-day activities to sustain operations and is therefore not project-

ized. However, as part of NNSA's annual planning process, M&O contractors are required to submit requests for maintenance funding, which include: a description of the work to be accomplished, including major mission deliverables and programs supported; a description of any key work not accomplished and any remaining risk; workforce impacts (total FTEs/year); and annual funding requirements. NNSA evaluates these requests, adjusts the annual funding requested as determined by subject matter experts, and develops a proposed maintenance allocation for each site. The site allocations are subject to change based on decisions made to balance maintenance investments with programmatic priorities during the NNSA programming process.

QUESTIONS SUBMITTED BY MR. COOPER

Mr. COOPER. What is the cost and safety risk of deferring problems and maintenance, and what are you doing to incentivize addressing and funding routine maintenance before small problems become big problems?

Mr. SMITH. The primary concern with knowingly deferring maintenance is that a major, unforeseen failure could occur. Our top non-negotiables—we call them our imperatives—are safety and security. We will protect our people, our communities, the materials we are entrusted with, and the environment in which we and our friends, neighbors, and communities live. We cannot, and will not, compromise safety and security. Our nation, however, also relies on us to deliver our mission with the highest quality products and services. Keeping our facilities and working conditions safe, secure, and operating properly requires ever-increasing operations and maintenance funding because the potential disruption to operations and mission deliverables is a real concern, as is the likelihood for a substantial increase in costly repairs. Additionally, as discussed during my testimony, there are occasional facility conditions that place and individual or a group of individuals in a higher risk posture than we would like despite our best efforts to find and correct these conditions.

Mr. COOPER. What is the cost and safety risk of deferring problems and maintenance, and what are you doing to incentivize addressing and funding routine maintenance before small problems become big problems?

Dr. MCMILLAN. We manage our infrastructure portfolio centrally at the Laboratory to prioritize investments that minimize risk while accomplishing the mission. For example, the safety of our workforce and the public are prioritized over risks to mission and schedule. Members of our workforce are strongly committed to the national mission, and they can become frustrated if their ability to execute their work in support of Laboratory missions is affected by unfortunate or unforeseen infrastructure issues. We plan our maintenance work to emphasize predictive and preventive maintenance in order to limit the need for corrective maintenance within the budgets that we are provided by NNSA and our internal site support funds. On average, the Laboratory spends 45–50% of our maintenance budget on preventive maintenance and the balance on corrective maintenance. The incentive for this approach is simple. We minimize disruptions to work when we can by carefully planning maintenance activities, and coordinating outages at the Laboratory with mission requirements. Corrective maintenance, by definition, is performed after there are equipment failures that create disruptions and impacts to the mission. However, when maintenance is deferred due to lack of funding, it is just a matter of time before equipment or system failures occur.

Mr. COOPER. What is the cost and safety risk of deferring problems and maintenance, and what are you doing to incentivize addressing and funding routine maintenance before small problems become big problems?

Mr. RICCIARDELLI. At the legacy Bannister facility, between 250 and 300 electricians, millwrights, janitors, and laborers were employed full time to maintain the 1940s vintage facility. Even with that level of effort, deferred maintenance remained constant at about $130M. Because facility maintenance projects are largely "one-of-a-kind," the safety risk is much higher than routine, repeatable production work. The plant had good safety performance overall, but the majority of the OSHA-reportable injuries originated from maintenance projects.

Under the new KCNSC lease model, facility maintenance costs are largely included in the lease payment and an escrow fund is in place to address big ticket maintenance needs that will emerge as the facility ages. NNSA provides no labor resources to maintain the facility or grounds which is solely the responsibility of the landlord. The private owner is incented to maintain the value of the property and preserve their overall capital investment independent of our tenancy.

Mr. COOPER. How does NNSA evaluate the cost-benefit of public-private partnerships over the lifetime of the facility? What lifetime is assumed?

General KLOTZ. NNSA evaluates the proposals for compliance with OMB Circulars A–11 and A–94. The lifetime assumed is based on the Government's planned use of the building.

Mr. COOPER. The total amount of NNSA's deferred maintenance backlog includes maintenance that NNSA does not plan to address for a variety of reasons (i.e., excess facilities). What amount of the deferred maintenance backlog does NNSA actually plan to address over the next five years? What factors are used to determine what deferred maintenance will or will not be addressed?

General KLOTZ. The Fiscal Year (FY) 2017 President's Budget Request will enable NNSA to continue to halt the growth of deferred maintenance. NNSA has a project prioritization methodology that prioritizes annual investments by evaluating key criteria. Criteria evaluated include deferred maintenance reduction, program requirements, safety and programmatic risk reduction, and increases in operational efficiency and/or productivity.

Mr. COOPER. Is the balance between recapitalization and maintenance appropriate? How do you balance necessary investments for maintenance with requirements to focus and invest in programmatic priorities including life-extension programs?

General KLOTZ. The balance between maintenance and recapitalization is currently appropriate. NNSA has improved its infrastructure investment strategy by using the new budget structure approved by Congress, and enhancing decision-making through the implementation of new program management tools. NNSA also began requesting increased funding for Recapitalization and Maintenance projects starting in FY 2015. These funding increases are essential steps in decreasing deferred maintenance, arresting the declining state of infrastructure, increasing enterprise productivity, improving safety, eliminating costly compensatory measures, and shrinking the NNSA footprint through the disposition of unneeded facilities. To balance maintenance investments with programmatic priorities, NNSA conducts a disciplined programming process integrating budgets across portfolios to ensure maintenance investments are consistent with, and support, the other programmatic work of the NNSA enterprise.

Mr. COOPER. Naval Reactors also has a majority of its facilities dating back to Cold War-era with nearly 60% of its facilities now over 50–70-plus years old, however these facilities are not in such a state of disrepair as some of the nuclear complex facilities are. To what do you attribute this difference?

General KLOTZ. The role of nuclear weapons in our national security strategy is widely understood. However, the link between our nation's nuclear deterrence and the NNSA infrastructure that supports it is less well appreciated. As a result, investment in NNSA's infrastructure has generally not kept pace with the growing need to replace Cold War era facilities. Every year, NNSA works to balance the needs of all our vital missions with the need to maintain and modernize our infrastructure. Naval Reactors (NR) oversees four government-owned contractor-operated Department of Energy sites: Knolls Atomic Power Laboratory; Bettis Atomic Power Laboratory; Kenneth A. Kesselring Site; and the Naval Reactors Facility. These facilities' sole purpose is to support the nuclear Navy and NR provides Federal oversight for all aspects of the sites' operations. The single mission focus helps NR reconcile priorities and react accordingly when problems emerge due to the state of facilities and infrastructure. NR weighs facility and infrastructure resource decisions using the same rigorous process used for making technical resource decisions. NR reassesses its resource needs semi-annually and prioritizes these needs so that the sites' facility and infrastructure provide the necessary foundation on which technical work can be accomplished to support the nuclear fleet of today and tomorrow. However, NR is not immune to the effects of degrading facilities and infrastructure. For example, NR needs to replace the Expended Core Facility in Idaho, which is over 55 years old, does not meet current standards, and requires recapitalization. Over the past 10 years, NR has had to increase management attention and resource allocation to facilities and infrastructure and the trend is expected to continue.

Mr. COOPER. What incentives does NNSA provide for its M&Os to sufficiently invest in maintenance? Are the proper incentives in place to avoid facilities falling into such disrepair until a new facility is required?

General KLOTZ. As part of our Contractor Performance Evaluation Process (CPEP), NNSA incentivizes Management and Operating (M&O) contractors' performance via award fee. The CPEP process is a uniform, corporate process for evaluating NNSA M&O contractors' performance. The Fee Determining Official's (FDO) award fee determination is a unilateral decision made solely at the discretion of NNSA. M&O contractors are evaluated on maintaining, operating, and modernizing DOE/NNSA facilities, infrastructure, and equipment in an effective, energy efficient manner as part of the annual CPEP process. Starting in Fiscal Year (FY) 2016,

M&O contractors are also evaluated on their progress to halt the growth of deferred maintenance and to disposition of unneeded infrastructure and excess hazardous materials. The same performance evaluation will continue in FY 2017.

Mr. COOPER. What improvements in management and safety culture are necessary to avoid some of the problems we are now seeing, with parts of the ceiling falling down in some facilities? How did we get to this point? What is the plan to ensure that billions of dollars in new investment to recapitalize nuclear complex facilities do not suffer the same fate from lack of maintenance?

General KLOTZ. NNSA is making improvements in management and safety culture and focusing attention and investments to sustain infrastructure by:

- Deploying new, risk-informed, data-driven management tools;
- Increasing funding for maintenance and recapitalization; and
- Linking award fees to safety and infrastructure performance.

There is consensus amongst Department of Energy and NNSA stakeholders that the current state of NNSA's infrastructure presents a risk to our strategic deterrent and must be addressed with urgency, resources, and focus. To that end, NNSA established the Office of Safety, Infrastructure and Operations in January 2015 to ensure NNSA's infrastructure needs are adequately represented and necessary investments are made. At the Departmental level, the Secretary of Energy has established key groups comprised predominantly of senior career service professionals to sustain our current efforts. These groups include:

- The Laboratory Operations Board (LOB);
- The Infrastructure Executive Committee; and
- The Excess Contaminated Facilities Working Group.

QUESTIONS SUBMITTED BY MR. LARSEN

Mr. LARSEN. DOE's Real Property Asset Management contains infrastructure investment benchmarks for maintenance and recapitalization activities. To what extent does NNSA's fiscal year 2017 budget request and associated Future Years Nuclear Security Program meet these benchmarks? If NNSA's budget request does not meet these benchmarks, please describe why.

General KLOTZ. The Fiscal Year (FY) 2017 President's Budget Request is adequate for funding 2017 infrastructure-related activities.

DOE uses findings from the National Academy of Sciences, *Key Performance Indicators for Federal Facilities Portfolios: Federal Facilities Council Technical Report Number 147* (Washington, D.C.: 2005). The findings suggest that 2% of Replacement Plant Value (RPV) should be invested annually for infrastructure in good condition. However, for infrastructure in poorer condition annual investments should be closer to 4% of RPV. NNSA's requested increase in Maintenance and Recapitalization funds for FY 2017 would put NNSA's investment at 3.1% of RPV (up from 2% in FY 2015 and 2.5% in FY 2016). During times of constrained budgets, NNSA must balance budget limitations and risk across all its vital programs to optimize mission results. Although lower than the benchmark, NNSA's FY 2015 and FY 2016 Maintenance and Recapitalization prioritized infrastructure needs across the NNSA enterprise and invested in numerous, critical infrastructure improvements. The year-over-year investment increase from FY 2014 enabled infrastructure investment planning and integration with operations

The FY 2017 President's Budget Request will allow NNSA to:

- Increase investments in recapitalization and maintenance efforts to reduce safety and programmatic risk
- Transfer the Kansas City Bannister Federal Complex to the private sector for redevelopment (this will eliminate 2.93 million square feet of excess facilities)
- Increase buying power via strategic procurement of common building systems across the enterprise (e.g., roofs, HVAC)

The FY 2017 President's Budget Request provides a balanced approach to continued NNSA infrastructure investments, as infrastructure is but one consideration in a broader portfolio of NNSA programmatic requirements.

Mr. LARSEN. NNSA is currently taking action to improve data needed to better prioritize infrastructure investment. Please describe the current implementation status of the BUILDER system NNSA is using to prioritize infrastructure investments. When fully implemented, please describe how the BUILDER system will allow NNSA to prioritize and oversee deferred maintenance investments while also allowing management and operating contractors the ability to complete needed work in a timely manner.

General KLOTZ. NNSA's deployment of BUILDER is a three-year effort, occurring from FY 2015–FY 2018. It involves data for approximately 6,000 assets which will

include more than one million systems, components and sub-components. Progress to date includes:

- Migration of all current inventory and condition data;
- A peer review of all migrated data to ensure quality and consistency; and
- Development of an NNSA-specific Functionality Module, which measures a building's suitability to function as intended and required for the mission.

By early 2018, NNSA will complete the following activities:

- Conduct physical assessments of remaining systems to populate inventory and condition data gaps;
- Perform Functionality Assessments;
- Integrate BUILDER into the infrastructure planning process;
- Calculate Deferred Maintenance, Repair Needs, and Replacement Plant Value using BUILDER and develop business rules;
- Develop an online NNSA BUILDER training; and
- Initiate the integration of BUILDER with site computerized maintenance management systems.

Full implementation and sustainment of BUILDER will be achieved by early 2018. Upon full implementation, NNSA will continue working to integrate each site's computerized maintenance management system with BUILDER to achieve long-term sustainment. BUILDER is a web based software tool to help decide when, where, and how to best maintain, repair, and recapitalize infrastructure. Developed by the U.S. Army Corps of Engineers, BUILDER has been recognized by the National Academy of Sciences as a best-in-class practice for infrastructure management. BUILDER uses preexisting engineering data to predict facility and component conditions, prioritize maintenance work, and support analysis of different spending scenarios. BUILDER is the center of our risk-informed, data-driven infrastructure investment strategy. Our plan is to use BUILDER to:

- Describe the condition of NNSA's infrastructure, the gaps in NNSA's infrastructure, and the risk to programs;
- Document the resources needed to restore and then sustain NNSA infrastructure;
- Determine the right projects to execute;
- Guide site maintenance plans; and
- Help to identify AMPs Asset Management Programs (AMP) like the Roof AMP (RAMP) and the Cooling and Heating AMP (CHAMP).

Mr. LARSEN. What does NNSA spend annually on surveillance and maintenance of excess facilities that will be transferred to EM in the future for D&D? How are these costs incorporated into NNSA's estimate of deferred maintenance?

General KLOTZ. In Fiscal Year (FY) 2016 NNSA invested roughly $30 million on the surveillance and maintenance of excess facilities that are known or suspected to meet the criteria for transfer to DOE's Office of Environmental Management (EM). Investments in surveillance and maintenance are made to address deferred maintenance and prevent deferred maintenance from accumulating. Once a facility becomes excess, the majority of deferred maintenance is removed from the backlog because NNSA no longer needs to conduct that maintenance as the facility is no longer needed for mission work. However, deferred maintenance will remain and/or accumulate on any systems required to maintain the facility in a safe, shutdown condition, such as fire suppression systems.

Mr. LARSEN. How does NNSA decide which excess facilities to transfer to EM first? Are risks and costs prominently factored into such decision-making so that annual maintenance costs, as well as lifecycle cleanup costs, can be minimized?

General KLOTZ. NNSA has evaluated its excess facilities to determine those that pose the greatest risk and have identified several higher risk facilities we believe meet EM's conditions for transfer. However, EM is currently facing many competing regulatory and other compliance obligations, and performance challenges in some areas. As a result, EM is unable to D&D all of the excess facilities already transferred from other Program Secretarial Offices (PSOs) in a timely manner or to take in additional excess contaminated facilities from other PSOs in the foreseeable future. Until EM accepts an excess contaminated facility into its portfolio, the PSO is responsible for maintaining the excess facility in a safe condition. The information gathered by NNSA informed the recent effort by the Excess Contaminated Facilities Working Group (ECFWG) which is finalizing a report to Congress on its work, the Plan for Deactivation and Decommissioning of Nonoperational Defense Nuclear Facilities report to Congress. NNSA's highest risk facilities are being prepared for transfer, but are not ready yet. NNSA's primary concern continues to be the risk posed by these facilities to the public, workers, and the mission. Minimizing that risk in these facilities requires continual surveillance and maintenance.

Mr. LARSEN. What is the status of DOE's Excess Contaminated Facilities Working Group, and what are the key findings/recommendations from the group?

General KLOTZ. The Excess Contaminated Facilities Working Group (ECFWG) developed and executed an enterprise-wide data collection effort to obtain updated cost and risk assessments to deactivate, decontaminate, decommission, and demolish excess facilities. The updated data from the working group was used to define the scope of the challenge and to identify options for how DOE may better prioritize excess facilities. The ECFWG is developing policies to institutionalize a corporate approach, and updating and validating data gathered by the working group's efforts. The group also is finalizing a report to Congress on its work, the Plan for Deactivation and Decommissioning of Nonoperational Defense Nuclear Facilities.

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