TRANSCRIPT

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Q: Clue us into your view, your agency's view of nuclear weapons, nuclear material security around the world. How secure is it? I'm specifically speaking of course, about our allies or sometimes allies--Russia, India, China, Pakistan.

A: Let's start with Russia because that's where the most material is. The Russians and we have been working together for over a decade. We've made very substantial improvements in physical security. They have put a considerable amount of their own resources into physical security.

What we're doing now following the two Presidents meeting at Bratislava last year is really working more on how you make this sustainable. That involves changing security culture. So we've had a series of workshops which are exchanging best practices, looking at emergency management, and moving much more from an assistance function to a partnership and exchanging views function. It's not nearly as glamorous and you don't get to put lines in budgets about it, but maybe more important.

China, we are doing nothing on the military side although I have no particular reason to believe that there is a significant problem there. We are doing things on the civil side. We did a major technology demonstration in October which the Chinese brought people in from throughout the country. What we did was we took a facility and we used it as a demonstration of how you link together all the different tools, the material control and accounting tools, the security tools. And I think that making slow progress there and improving physical security on the civil side, we are not directly involved on the military side.

We have a very longstanding exchange of vies on all things nuclear with the British, and part of that exchange is on physical security. That's two very good organizations, making sure that they share best practices. An example, the British send a team to our Security Protection Officer competition annually. We have a whole series of exchanges there.

We're in some discussions with some of our other allies--France, Japan. Mostly on sharing information. India and Pakistan, both governments have assured us they take security very very seriously. I don't have any reason to doubt that.

Our particular niche is physical security. I think the issues in Pakistan obviously in the aftermath of AQ Kahn are not so much bad guys coming over a wall, but diversion.

As you know, the United States has not been given access to Dr. Kahn, but we have been given some assurances by the government of Pakistan that the various problems that he represents have been corrected.

Q: Has Pakistan asked you to help out with visit security post-Kahn?

A: We're in fairly constant dialogue with a number of states but there's been nothing recent like that.

The area where we're spending a lot of time and energy under the rubric of the Global Threat Reduction Initiative, is all these little chunks of highly enriched uranium that are around the world, typically associated with research reactors. Research reactors is a misnomer, a little bit, because some of these things aren't so much for research in the sense of advancement of science, but they're for the production of medical isotopes. That becomes important because you can't just say well, okay, we'll end those because medical isotopes have short lives but are important.

So the strategy over the long term--long term here means 2014--is to convert both in the United States and globally research reactors away from highly enriched uranium to low enriched uranium.

We've targeted 106 reactors worldwide and roughly 40 of them have been converted. We're converting two in the United States this year, one at Texas and one at the other place and if it's important to somebody I can get it, I just don't remember it.

We've got another 40 that we sort of know how to convert and then there are about two dozen where we're continuing to work on developing a suitable, low enriched fuel. We've also done upgrades to security, not as dramatic obviously as you do with weapons work, but we've done upgrades to security, basically helping countries raise protection to IAEA levels which are better than they were but not as stringent as we imposed on ourselves in the weapons world.

Finally in the former Soviet Union, and more generally where research reactors were supplied by Russia or by us, we're in the process of not only converting but bringing back both unused fuel and we periodically see little things about so many kilograms from Lithuania and so many kilograms from Ukraine. But also irradiated fuel.

Because this is highly enriched uranium there's still a fair amount of energy content, U2-35 in irradiated fuel, spent fuel. We made a real breakthrough a couple of months ago in the first shipment back to Russia, this particular one came from Uzbekistan, came in four shipments and we're hoping the Russian environmental regulations are complex, as ours are, and it took us a while to get through that because it's the first time they've ever brought back research reactor fuel. We're hoping that this precedent will let us, I think there are a total of 17 Russian supplied research reactors, a couple of them we're not going to get to. One of them is in North Korea. Cooperative work in North Korea right now seems pretty far fetched.

On the other hand, one was in Libya and I would have told you two years ago that cooperative research there was far fetched, so who knows?

Q: Sir, on the 106, and I apologize if everybody else knows this. How many of them are in the United States? How many are in other countries?

A: The 106 number I gave you I think is wrong. Can I cheat?

Q: Sure.

A: Cool.

(Pause.)

A: It says here on my little cheat sheet that 25 of them are in the United States, 51 of them are U.S. origin reactors in third countries, eight are in Russia, 13 are Russian supplied reactors in third countries, and then there are a couple in China and a couple of Chinese supplied reactors. We can get you the specifics if you need more detail.

We merged the U.S. and foreign program a couple of years ago under the management of folks who work for me on the theory that it just seems to make sense.

Q: Did the U.S. supply Pakistan with permissive action [inaudible] for its nuclear weapons?

A: No.

Q: Is there any way to build or to use a nuclear warhead as an earth penetrator without spreading a lot of radioactive dust and debris and destruction?

A: I believe the answer is no. Let me tell you why I'm being a little evasive. There is certainly no way to do it if you think of traditional delivery mode. In other words if you think of what we were trying to do with the upgrade to the B83 or what the Clinton administration did with the B61. You're hardening a case so it drives a few meters into earth. That clearly is, for purposes of radioactive debris that's a ground burst.

Q: You mean a surface burst.

A: Well, a surface burst, yeah. It has essentially the same effect.

I am aware of one scientist who believes that it might be possible to penetrate so far that you could contain, but his concept which I don't fully understand is not in government. It's very exotic. Other than that, I know of nobody who believes that you can penetrate far enough to contain fallout.

The argument for those who used to favor nuclear earth penetrators was that you can put a greater fraction of the energy into the ground, thus damage deeper targets, for any given yield. And since the amount of fallout goes with yield, if a target's deep and you can't put that much energy in the ground, then you have to use a bigger warhead, you get even more fallout. But I think the right way to think of it is not between zero fallout and no fallout, but between lots of fallout and even more fallout. I think it is a mistake and I hope nothing we've said suggests we believe it. The idea of a surgical nuclear war, the idea that you the use of nuclear weapons is anything other than unimaginably destructive, I think is not a helpful idea because it doesn't square with the physical facts.

Q: [inaudible]?

A: This is communication to me and I'm not sure if he intended it to be public. I'm trying to be as honest as possible. I would have given you a categorical "of course not" but this is a guy for whom I have a great deal of respect.

I mean you can kind of sort of think, in principle obviously I put things well underground in Nevada and didn't get fallout, but it also took me a very long time to do it. I don't exactly understand they physical principles.

Q: Right now with the funding pulled for the robust nuclear earth penetrator, are you getting indications that this is something we really need in our arsenal?

A: I think it's very clear that there are underground structures in the world that are beyond the limits of U.S. power. I think it's very clear that deterrence is improved if nobody believes that they can be sheltered from U.S. retaliation. I think it's very clear that the best way is to find ways

to hold underground facilities at risk through conventional means. That either means very good conventional penetrators or it means very precise intelligence so you can get entrances and exits and what have you. I don't think there's any question but that there's a military requirement to be able to do that.

The issue that was debated in the last couple of years is if it turns out that you can't do that conventionally is it worth giving a future President the option of holding them at risk with nuclear weapons? Congress has decided no, it's not, so we're not doing that.

We had always hoped it would be a moot point. We had always hoped the efforts DoD is doing to engage underground facilities will be successful. But if you want to use brute force then nuclear weapons are an attractive way of doing brute force. So I want to, what I'm trying to distinguish is there's a clear military requirement to be able to hold at risk underground facilities. There is not a clear military requirement to be able to do it with nuclear weapons. The previous attempts by the administration was to find out the implications of doing that if we chose to develop the capability in the future.

Q: A question for you about the LIBOR replacement warhead program. If that moves forward would it improve existing nuclear weapons capabilities in any way, or would it simply replicate existing capabilities in a more user-friendly package?

A: It would not improve military capability. We envision this as a warhead with the same military characteristics delivered by the same weapons delivery vehicles and suitable against the same targets. It would improve safety and security almost certainly. Remember, we're still in a design competition stage until I know which of the competing designs we've picked and what features are in there.

One of the things we hope to do is both be maintenance friendly and environmentally friendly by getting rid of materials and less sensitive to aging. But also we have warheads that were designed 40 years ago and we know more about how to design in intrinsic safety and security.

So if when you say military capabilities you mean ability to strike a target, it's the same. If when you say military capabilities you include sort of safety, security, the kinds of auxiliary things that we'd like to have, then it will be an improvement but it won't change the military characteristics. It won't change the delivery vehicles. That's why I can say with a straight face it's unrelated to any sort of arms race.

Q: As a side note on that same issue, what's your current assessment of the [inaudible] program? Why do you need a reliable new weapon when we've got a big arsenal already?

A: Stockpile stewardship is working. We have no reason to believe that we have any significant problems. We have no reason to believe that we need to resume testing at any particular time in

the future. And it is entirely possible that if we do nothing 25 years from now somebody will be sitting in this room and saying the same thing.

On the other hand, every day we have the oldest stockpile we've ever had in the United States. Not all of the aging phenomena are well understood. So the question is not so much go or no go. I'm pretty sure the existing stockpile will still go bang in 20 years if I do absolutely nothing. The question is a function of design and whether there will come a point where the inherent uncertainties grow greater than the margin we build into these systems.

You have to remember, we built these systems at a time when we believed it was important to get lots of warheads on the missiles because we had to keep up with the Soviets, so we stretched yield to weight ratio. We built these things at a time when we believed plutonium was precious resource and we should use as little of it as possible. When you design a warhead in that kind of world you have a very finely tuned machine that's very close to performance marches. And as you get greater and greater uncertainty with age you run the risk of getting, and performance margins, for example, are, there is always some uncertainty in the yield of the primary, there is always some uncertainty in how much yield you need to set off the secondary. We want those two uncertainties to be far apart so there's no [inaudible].

So the idea of a reliable replacement warhead is to relax those constraints. To say look, I've got the same missiles but now I've got fewer warheads on them so I don't need to worry about making the warheads as light as possible. I can make it heavier and use more high explosives. I can take out some of the environmentally difficult materials.

So the first thing is there is a reliability effort that is if the aging phenomena turn out to be a serious problem we will have a way to counter it.

Secondly, you said we have a very big stockpile. One of the reasons we have a very big stockpile is that if something goes wrong we have a very slow and majestic process for fixing it, and that's because these things are so finely tuned.

Now if you were able to make a ruggeder, if you will, warhead, then you'd be able to put it through the periodic maintenance that you do, the life extension and analog, correcting the inevitable problems quicker, and you'd be less dependent on having a log of sparse in a bunker somewhere. So that's a second advantage.

Then the third is one I mentioned earlier, that we do know enough about modern safety and security to know that we can build more of it into the warhead than we have traditionally done.

The reliable replacement warhead helps us with aging phenomena if they turn out to be significant, helps us with the ability to maintain warheads by making them simpler to repair, bringing the plants in in the design stage rather than after the design is done, for example, and

helps us with safety and security.

What that will let us do is take the infrastructure and make it truly responsive so that we can react quickly to changing requirements. What that will let us do is change the very substantial number of non-deployed warheads that we keep as a hedge.

If I've got an infrastructure that can make extra warheads then why do I need to keep a lot of extra warheads as a hedge? If I've got an infrastructure that can take a problem, correct it, get a warhead back on the stockpile in a year, then I don't need to have a whole new separate set of warheads in a bunker somewhere as a hedge.

Q: A year. What does [inaudible]?

A: I don't know. Well, let's see, it depends once again on the magnitude of the problem and I'm giving you a goal, but we haven't done this yet. You better than anybody knows that when a government official tells you want he's going to do after he's out of office, a certain amount of skepticism is not unfair. We have set ourselves a series of very ambitious goals for the infrastructure of the future. Some of those goals are the infrastructure of the relatively near future, early next decade. Some of those goals are goals for the infrastructure of the relatively far future. We're using the buzzword complex 2030 now because everything we want to get done won't be done until then.

Right now if you find a problem in a warhead that is important enough to fix but not important enough for you to go to the military and say you have to stop using those. I was about to make a statement that's not actually true, and I don't want to--never mind. [Laughter].

If you find a problem by the time you work through the analysis and then you work through taking the warhead back through a life extension type process, you're looking at years. Certainly to turn over the thing. Now we haven't found a problem of any significant magnitude. What we find is a lot of small things that we fix during life extension programs, but the goal is to be able to take a warhead and diagnose and correct problems quite quickly. That's a stretch goal. Whether we can do that, I don't know. But we certainly aren't going to be able to do it with the kind of warheads we designed in the Cold War. That's why thinking about responsive infrastructure--Responsive infrastructure was an idea that we've had since 2002. Reliable replacement warhead was an idea we came up with a couple of years ago, multiple people.

The interesting insight for the last year and a half or so is to realize those aren't two topics. That in fact the reliable replacement warhead is a precursor for getting a responsive infrastructure and responsive infrastructure will make it easier to produce a reliable replacement warhead. So we're increasingly talking about the two as conceptually linked, although obviously at this stage in development they're completely separate line items. RRW is a design competition right now. But as a design competition, maybe we'll understand that part of that design is producibility and

maintainability.

Q: Ambassador, the House Armed Services Committee in its report talked about a possible delay or deferment of [W80] life extension program. I wonder if you can tell us if that's true and what are the reasons behind that. And if you are going to delay it, can you easily transfer those personnel to the reliable replacement warhead effort?

A: I read that in the House report. The Department of Defense is constantly looking at their long term requirements and we're constantly looking at what the implications of those requirements are. And we are giving consideration to a delay in the life extension program for the [W80]. It's been mentioned in testimony a couple of times. They're not final decisions.

I believe that you could shift the resources or some of the resources. Obviously individuals who are expert in a particular design are also expert in the concept of nuclear weapons design so I think you can shift the effort to a reliable replacement warhead and that's what the House report says you ought to do.

Whether that means every single human being now is working on the [W80] would be working two years from now on the reliable replacement warhead, that's not the way it actually works.

But this is not like saying they used to work on nuclear weapons and now they're going to work on farm implements. The skill sets are similar. So I think it would be relatively straightforward to shift those resources. And certainly if the W80 life extension does get pushed off into the future, that's what we'll do.

Q: I'm not sure whether it's in your purview but there is increasing concern about the accumulation of spent fuel in American civilian reactors--[Yucka Flat], [inaudible], the stuff is piling up all across the country. Is that part of your--

A: No. That's the broader department. I would refer you to Paul Golden who is the Acting Head of the Office of Disposing Radioactive Waste Management, or to Anne Womack Coulton, the Director of Public Affairs, who can put you in touch with the right people.

I have enough trouble keeping up with my own stuff. I know a little bit about it. I sit in staff meetings and I hear discussions, but I have no responsibility for it and you don't hear what I think, basically. [Laughter].

It's obviously a problem. People are writing about it, people are talking about it on the Hill, but in terms of the department's view, I think I'm the wrong guy.

Q: [inaudible] on the reliability of the warheads, the tritium issue, [inaudible] to produce tritium and [inaudible] warheads. Where is that?

A: Tritium is a radioactive isotope of hydrogen that is used in nuclear warheads. It decays with a 12.6 year half-life which means that sooner or later you've got to be able to make it.

As you shrink the stockpile which we have been doing, and you push the time into the future when you need to make more tritium but you don't push it out forever, the way the United States will meet its tritium requirements for weapons is by taking what's called a tritium burner absorber rod, since it's with the government and we use acronyms we call it a TBAR. Basically that's a big fuel rod and it goes into a TVA reactor. It sits there and you generate tritium.

You take that rod and you ship it to the tritium extraction facility at the Savannah River site near Akin, South Carolina. Basically you crack the rod open--you do all this remotely. It turns out that tritium is highly radioactive and it's absorbed through the skin and so one needs to use a great deal of care. So you do this remotely and you've got tritium. Then you put it in little bottles and you store it there until it's time to exchange it in the warheads.

The tritium extraction facility is undergoing its final acceptance testing now which involves working through with inert gas. We will actually, and the first tritium absorber bars have come out of the reactor and are awaiting the facility to be ready to use them. We expect, we are committed to actually extract tritium by the end of '07. I think we will beat that slightly. The facility about four years ago had some management problems not atypical for large construction projects, but has been consistently on track and on budget in the last couple of years, and various safety reviews have been done so we'll do that. Exactly how much we will do depends a little bit on where the stockpile levels out. The President took us a very significant reduction two years ago. One of the arguments for a reliable replacement warhead is to let you further reduce the stockpile. The question is, how far along in that program do you have to be before you further reduce the stockpile? That's a presidential decision that has not yet been made so I don't want to completely prejudge it.

Anyhow, that's where we are on tritium. That's one of the things that has actually gone quite well recently and we'll be able to make however much tritium the country needs.

Q: I wonder if you would bore down deeper into Russia's stockpile issue. You said that the security is improving, the culture is improving very much [inaudible]. Can you talk, whenever I talk to your [inaudible] at your labs and you ask them in terms of proliferation of this material what is their greatest concern. They always come back to Russia. They always go back to these huge stockpiles. They always go back to, they've never been totally on board in letting us do the kinds of things that we think are necessary.

A: All true.

Q: In context, even the best of times Russia has been reluctant. It seems like our relations with

Russia recently have turned rather chilly and I'm curious whether that has any impact on that cooperation between--

A: People worry about Russia, you know the old Willy Sutton, I rob banks because that's where the money is. People worry about Russia because there's a huge amount of material there. That material, let's take two separate chunks. The material that's in warheads. Those are in the custody of the Russian military and surprisingly, that part of it in many ways is going much more smoothly than you would expect.

We will finish improving security at the Russian navy facilities the end of this year. That's been a very quiet success. We got involved with the Russian navy largely through happenstance. The division of labor between me and the Department of Defense, it would be an error to look for some clear, coherent, organizing principle. [Laughter]. There is simply, we've had different opportunities. We had an opportunity to get started with the Russian navy at a time when the Defense Department didn't. They got started with the 12th [Humo], the 12th [main] directorate at a time when we didn't have very good ties there. Russia is still a little bit of a fragmented who do you know society.

More recently, we have been working with the Strategic Rocket Forces and with the General Staff.

Following Bratislava we got some very complete requests for improvements and upgrades, and it's pretty clear that the Russian military is taking this seriously.

What is less clear is whether they have the same threat standards that we do. We are extremely conservative. I know, and somebody referred to the House Armed Services Committee report, and the House Armed Services Committee report as it did last year wonders whether we're not being overly conservative in our own facilities because we spend a very great amount of money on security.

I think that the Russians historically have been slightly less conservative. So there is a professional difference in the how much is enough, and I'm not sure who's right.

Moving from the weapons stuff to the material, which is probably the more important. The truth is, nobody is going to get lax regarding nuclear weapons. Where the laxity comes is in guarding material that could be [assembled]. Historically that's true in this country, it's true everywhere.

There we work with the Federal Agency for Atomic Energy which is usually calls [ROSATHEM] which is it's Russian acronym. There are a couple of things going on there. One is this general question of how much is enough and how big the threat. I do think historically it's a professional difference of opinion.

Two is, the Russians have always been reluctant and recently have become even more reluctant to allow us the access that we would want for improvement. And in particular the Russians have chosen in a couple of their serial production facilities, facilities like our Pantex plant. To use their own funds, remember, between the two of us they're the ones that are running budget surpluses. [Laughter]. So they've been using their own funds to improve that.

I'd be happier, frankly, if we could share a little more expertise in that area but I'm not unhappy with what they're doing, but you talk to guys who sort of are nervous unless they go there and see themselves, you'll get the nervous reaction.

The third area and the one that I personally worry about is the sustainability of this. If you look back at the Soviet period, the Russians were legendary for creating grandiose things and then not maintaining them. So we've been working under the Bratislava process on a culture of sustainability, a joint working group, helping them put in place the mechanisms to make sure that the security improvements stay. That could be helping them draft regulations for how you run an inspection program from central government, to its some technical ideas, its workshops to make sure that the people at the sites are secure. Whether that ever will succeed we'll know in ten years. The truth of the matter is at the end of the day it's a question of when we go will they put their resources into continuing it and we're working hard. That's the other area in which I think it's inherently unknowable.

Q: The concern a lot of people have is that terrorists will get their hands on either the material or weapons, more likely the materials. What is your understanding of the threat level? This was very big shortly after taking down al-Qaida in Afghanistan. We saw a lot of records that showed they had interest in this. They had some contacts with AQ Kahn's people. We don't hear so much lately. I'm just curious if you can give us some, without spelling the intelligence, can you tell us, is this something that you look at and the intelligence keeps you awake at night?

A: It is something that we look at constantly. My own assessment, and I want to distinguish between my own assessment and anything in the intelligence area which is not an area we comment on and not an area that [inaudible]. I think it is very clear that the al-Qaidas of the world are interested in and would be willing to use nuclear terrorism. I think it's also reasonably clear that while they are willing to die, they are not willing to die gratuitously for a failure and therefore the more you improve security the less likely it is that they're going to try.

I think that if you put those two things together it does not diminish my interest in making sure security in the United States and in other countries is as robust as possible, but I don't have any indication that any attempts are immediate.

I think the professional question of how likely and how many terrorists is in fact one of the things that permits tension within the United States government in trying to find that right balance, and it's tension within the Russian Federation. I think that many U.S. experts are

probably more conservative on this than some Russian experts.

Q: I was curious if you thought, or what you thought the circumstances might be that might prompt the United States to act first with nuclear weapons.

A: First of all there's only one person whose opinion on that is relevant and that's the President of the United States at the time. We have never ruled out in advance what a future President would do. My own view is it is virtually impossible but not completely impossible, to foresee a circumstance in the modern world in which that would be something that you would consider. So I don't want to give you a scenario because I think they're all pretty far-fetched. I don't think we ever rule out any element of American power, but it's very hard to see a situation. It has been sometimes said the administration has a doctrine of acting first with nuclear weapons, but that's not actually true. What national security strategy said was that if the guy reaches for the holster there is no obligation on you to wait until he's pulled the trigger before you shoot at him, and that's a broadening of the well known principle of hostile intent. That was a statement about the use of force, it wasn't a statement about the use of nuclear weapons. If you read that particular version of the National Security Strategy it said almost nothing about nuclear weapons because they're much more of a niche capability than they were during the Cold War.

So I don't think it would be correct to read this administration is any more or less likely to use nuclear force than its predecessor. I think that, I've been involved in the nuclear business for a while now, and I've never seen a really credible scenario for the United States to use nuclear weapons first, and I've never actually met anybody who I thought was likely to recommend that.

A number of years ago we did a series of wargames, the Cold War, a whole different thing. But it was amazingly difficult to get people who were sort of my level and being presented with really very far-fetched--Amazingly difficult to get people to say yes, now I would use nuclear weapons. I think even those of us who don't actually have the responsibility understand what an awesome decision that is.

So it's never helpful to tie your hands in advance because a certain amount of uncertainty is a healthy component of deterrence, but I find it very hard to think of a situation in which the United States would use nuclear weapons preemptively.

Q: The intellectual infrastructure at the labs. You want to get smart, progressive, creative ambitious people and it's extremely likely that they would go through their entire careers without ever having the professional satisfaction of doing something that comes to fruition. There's been a lot of concern about that. The Senate Armed Services for man years in the '90s worried about it and there were some make-work projects that--

A: and the world was going to end if we stopped nuclear testing, and everybody was going to quit and go work for Sears. [Laughter].

Q: Have we got gerbil wheels for them to run in and--

A: No. Well, first of all, I think that, I was talking to the Director of Los Alamos. The outgoing Director came in to pay his farewell call on the Secretary. He made the point that the reliable replacement warhead has transformed and energized the lab as almost nothing he had seen, and he's been involved in the weapons business for his whole life and is at the end of a career so he's looking at three decades. The reason is that it is both a difficult intellectual change and it's coupled with an important vision of how it makes the program better.

So I think one of the things that we get out of RRW is revitalizing the design capability and bringing in some of the people who are going to be there for a while.

One of the other concerns was that if you look at the number of people who have actually been involved in design of a weapon or of a variant, you find that they're pretty much all eligible to retire. And although it's not a new weapon in the traditional sense, there's enough new intellectual content in it so that we're transforming.

Secondly, stockpile stewardship is in essence an attempt to get what was somewhere between a craft and an empirical science and turn it into a theoretical science. That's intellectually exciting. We have increased computing power by a factor of a million in the last decade. A million. We're doing computations now--The computations that were done for this preliminary design for a reliable replacement warhead are more than the computations we would have been able to do for the design, during the entire design of many of the fielded weapons.

So I think what we are seeing is there is an intellectual excitement there, and thus far the theory that if you couldn't take it in Nevada and feel the ground shake you wouldn't think that your work--It was just not proven out.

I think it's also true that in the aftermath of 9/11, and whether it's a cause and effect I don't know, but we really are seeing a remarkably high quality of new people coming to work at the lab. That's the professional judgment of all three lab directors, all of whom have been looking at new people for a very long time.

So I'm not terribly worried about the intellectual future of the lab. I do think the RRW, and I should have actually mentioned that when I was talking about the advantages of it. I think that it does help provide a sense of excitement, but so does stockpile stewardship.

Understanding phenomena that involve temperatures hotter than the surface of the sun; understanding phenomena that involve time measured in pico seconds, that's an exciting intellectual challenge. You go and look at some of these things which I'm not going to let you look at--[Laughter]--My physics is all way in the past but even I can tell how intellectually

exciting some of this work is.

Q: I've always been curious about the term suitcase bomb, and I've asked this question to a few people and never really gotten a straight answer. But is there such a thing? Can you actually miniaturize a nuclear warhead into something that can be carried by one person?

A: Yes. And that's not a hypothetical statement. When I was at [Shnazinsk] in Russia for the anniversary of one of the two Russians weapons labs, the All Russian Institute of Technical Physics, they have a model of one of their artillery shells which you can carry. You've got to be kind of strong, but you can carry. Certainly small enough, and I think it is widely believed that we're every bit as sophisticated as the Soviets, who I think we probably could do that too.

I'm being a little coy because I'm trying to remember what's in the public domain, but if you think back to the Cold War era and the so-called atomic demolition missions which were designed to be portable by human beings, that's not recent. That's something that's 20 or 30 years ago. So I think you can do it.

The question is not so much is it possible. The question is, has there been any loss of control of these things.

First of all they're sophisticated designs, so I don't suggest to you that a bunch of guys sitting around in their basement can do things. But a bunch of guys sitting in their basement aren't going to do that anyhow. They're going to get something they can put in the back of a Rider truck and get it a few blocks from where they want to go. Or they're going to get something they can put in an aircraft and get it a few miles from where they want to go. So that's why you have focus on materials. You don't focus on materials because you're afraid of suitcase bombs.

That's also why you want to make sure you have adequate security, particularly at states that have some sophistication in their program such as the Russian Federation.

A few years ago--There is an urban legend that there are three Russian suitcase bombs in the Middle East. There's a schedule somewhere that comes up about every three and a half or four years, and as far as I can tell it's an urban legend. The Russians think it's not right, we think it's not right, there's no evidence. It does seem very strange that they've been over there since the early '90s and nobody's used them. But the point is not whether it's true, it's almost certainly not. The point is if it were true it would be a very big deal. That's why it's important that I spend money and time and effort helping the Russians improve their physical security.

So yeah, without getting into the technical details, it's possible to make a weapon that's small enough so that people can move it around. That's the sophisticated design. That's not the threat I'd worry about. I would worry about people accumulating enough material to make the crude sort of weapon that all our designers would say oh, that's not very much, and it's not an efficient

design, but it's still enough to do something. That's why you want to focus on materials.

Q: This might sound like a naive question, I guess. Maybe it's a little bit out of your lane. But in your assessment, how far is it possible for the U.S. to make cuts in its existing stockpile and still maintain [inaudible]? Are we talking a few hundred warheads maybe?

A: I'm the wrong guy institutionally to answer that.

The stockpile has two components. It has the deployed component--warheads sitting on missiles, bombs at bomber bases, cruise missiles available for loading. The President has said that by 2012 we'll be between 1700 and 2200 and that level is almost entirely set by the Department of Defense. My role in that process is peripheral and it's mostly to make sure we can support what DoD says. That's based on military judgment.

Many people believe that you can go lower than that. I don't think there is a consensus number, and until the President decides on a number you're just getting people's opinion.

Most people I know would not go down to the 300 that you sometimes hear in the press.

The part where I play is in the non-deployed stockpile. If you want to have 2200 warheads you have a significant number more than that that aren't deployed. Some of that's inevitable because we do a surveillance program where we bring a certain number of warheads back each year, take them apart, and that's one of the things we gain data for on stockpile storage ship. So you need a certain amount of what you might just call logistics things, but some of it is maintained as a hedge against either geopolitical change, which is somebody decides to attempt to engage in an arms race, or technical problems.

So what my department focuses on is being able to give us the capability of reducing the non-deployed hedge.

Again, a really good professional judgment about how much lower, if at all you can go than the 1700 to 2200 that we've announced, I think you really need to talk to the Department of Defense, and what they will say is we have these things constantly under study and we don't have anything useful to tell you now. Then you need to talk to other people who are outside the government. I think you will get almost all of them saying yeah, the country would probably be safer if you went down a little more. I don't think you'd get consensus on how much more. I think you'd not find very many of what I'll call the mainstream thinkers who go down to the few hundred level, but you find some. Some smart, thoughtful people.

I think also you will find that the flurry of interest in the '90s of people who thought that it was possible to move to abolition kind of in our lifetime, that most of those people don't think that any more, don't say that any more. I think the complexities associated with Iran and North Korea

have made it harder to believe, and I'll be frank, I don't believe that the political conditions for abolition will arise in my lifetime and I don't think the technical ability to verify abolition will be developed in my lifetime. So we're doing our planning, I'm doing my planning on the assumption that the country will need some kind of nuclear capability for essentially the indefinite future.

Q: We're out of time. Ambassador Brooks, thank you.

A: Thank you.

END TEXT