

111312 BRITISH AMERICAN SECURITY INFORMATION COUNCIL CAPITOL HILL BREAKFAST FORUM ON STRATEGIC FORCES MODERNIZATION WITH LINTON BROOKS, SENIOR ADVISOR AT THE CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES; AND HANS KRISTENSEN, DIRECTOR OF THE NUCLEAR INFORMATION PROJECT AT THE FEDERATION OF AMERICAN SCIENTISTS - TRANSCRIPT BY NATIONAL SECURITY REPORTS

November 13, 2012

MR. PETER HUESSY: I want to welcome you all here to another in a series of discussions about our strategic nuclear deterrent and strategic modernization that is sponsored by the British American Security Information Council, and I want to thank our friends at BASIC for sponsoring this. I also want to thank a budding United Nations that is here today. We have 10 embassies represented: the United Kingdom, Holland, the Czech Republic, Russia, Norway, France, Poland, Israel, Canada and Germany. Welcome to all of our guests.

In my introductory remarks today I wanted to go back and try to see if, at the very height of the Cold War, I could come up with some assumptions that we made at the time that have survived the test of time, if you will. And I went back to my files – I go back to 1981—on strategic modernization, and I found a paper published by Harvard’s International Security Review, “The Value of Strategic Modernization,” by Russell Dougherty, a former Strat Commander – SAC Commander. And he had something very interesting to say. He said, the triad was of enormous value because of the targeting dilemma that it gave an adversary, and the complication that it gave to Soviet attack planning, as he called it.

And a year later Congressman Aspin, then Chairman of the House Armed Services Committee, wrote a piece on the program review of the ICBM leg of the triad, MX rail garrison, small ICBM and Minuteman, in which he said the very same thing with respect to a variety of deployments, not just ICBMs, but your triad in general, that the variables were such that they made it nearly impossible for an adversary to think that they could target our nuclear deterrent with any kind of positive idea that it could be taken out in any considerable form. But they also, both General Dougherty and Les Aspin, said two other things, that modernization was consistent with and actually helped arms control, and that arms control and modernization should not close down options. They both said that.

And then just a week after Congressman Les Aspin put out his piece, the Congressional Budget Office in November of 1988 also put out “A Review of Strategic Offensive Forces: Costs, Effects and Alternatives.” What’s fascinating about this piece is at the end where they say maybe arms control can have an impact on this, but they assumed there would be no further arms control than the INF Treaty. And what’s fascinating is that they said the same thing as Russ Dougherty and Les Aspin. One, they said the protection afforded by the triad increases as

arms control bring warheads down – number one. They then talked about how we could get rid of all of this strategic modernization, or delay it, and save \$8 billion a year.

And what's fascinating is that the total amount of money that we were spending at the time was \$35.6 billion on all strategic forces, of which \$24.9 billion was procurement, research and development, test, evaluation and military construction, which is almost identical, by a couple of billion dollars, to the \$21.5 billion that Jim Miller talks about as the current planning for the next 10 years. And actually, in the 20-some odd years since this report was written, we've saved five times as much money through arms control, while still doing strategic modernization, than they had proposed we could cut by killing almost all of the current programs at the time, including small ICBM and MX rail garrison, for example. So what I found fascinating was that all three came to the conclusion that strategic modernization was consistent with arms control, that arms control and strategic modernization together could actually complement each other, and that you could do it at the same time and bring increased stability and save money.

And therefore, I want to finish with a quote from one of my favorite statesmen, Winston Churchill. This is his March 5, 1946 "Iron Curtain" speech, as it's known. And he talked at the time about the monopoly of nuclear weapons technology then under the control of the United States and Great Britain, and he mentions Canada – the three countries that shared it.

And he talked about, what if this was changed and those who are our adversaries had nuclear weapons? And he said, "The fear of them alone might easily have been used to enforce totalitarian systems upon a free, democratic world with consequences appalling to human imagination." And what he was talking about was, what if the bad guys had the monopoly on nuclear weapons as opposed to, in his view, of course, the good guys?

And he then concluded with the following, which is going to be where I conclude. He said, "For with primacy and power," meaning the United States as leader of the free world, "there is also joined an awe inspiring accountability to the future," meaning don't do something that you're going to regret. "If you look around you, you must feel not only the sense of duty done, but also you must feel anxiety, lest you fall below the level of achievement necessary to maintain the peace."

"Opportunity is here and now, clear and shining for both our countries. To reject it or ignore it or fritter it away will bring upon us all the long reproaches of the aftertime. It is necessary that the constancy of mind, persistency of purpose and the grand simplicity of decision shall rule and guide the conduct of the English-speaking people in peace as they did in war. We must, and I believe we shall, prove ourselves equal to this severe requirement."

I think that's very appropriate for where we are today. I think of us, today we're very much as we were in 1981, with almost all the strategic forces needing to be re-done, sustained or modernized, and we don't have plans for some of them, and some grave uncertainty given where we are geostrategically in the world as well as money-wise. What I think Churchill's comments, laid on top of the CBO, Les Aspin and Russ Dougherty tell me is don't do something that you are going to regret. Don't forestall options. There's no inconsistency between modernization and arms control. And the triad has enormous enduring value, not only at the very height of the Cold War, and now some 22 years after the end of the Cold War.

With that, I'd like to turn the microphone over to the director of BASIC. I want to thank you all for being here as our guests. Thank you very much.

(Applause).

MR. PAUL INGRAM: Thank you, Peter. And that, I think, is very much in the spirit of what we were trying to achieve by setting up this series of security dialogues, which is to see if there are areas of common agreement between groups that frequently in this town tend to be at each other's throats. And we are keen that in this conversation we don't escape some of the tensions that clearly are in this conversation around budget and some of the conflicts there are between perspectives. But it's important too, I think, for us to use what opportunities we can, this being one of them, to see if there are areas of common agreement too. And it's very interesting that Peter highlighted those areas where there were common agreement in the past, and it would be interesting to see if we get some of that repeated today.

So the purpose of these strategic dialogues is to bring us together: analysts, staffers, officials, think-tankers from all sides of this discussion to see if there are those areas of common agreement. I'm not going to say too much on nuclear modernization as it might queer the pitch for the speakers. And also, you may disagree with me and I don't want to be in the position of chairing this meeting and you feel that you're not being represented.

I think it's important, firstly, to lay out why we are addressing the issue of modernization. It is obviously a very key issue and will be for the next few years as we dance on the budget cliff. A lot of you may think that there's going to be a lot of debate and discussion over the next few weeks and that maybe there may be some resolution to this. But I seriously suspect that this dance is going to continue for a few years to come. And that, of course, is the context within which we discuss these issues of modernization.

The reason why we picked modernization was because it was quite clear from the last strategic dialogue event we had back in September, that there was generally support for the idea of modernization. The difficulty was knowing exactly what one meant by that word. And

people, of course, with language, often use words and mean different things, and modernization is particularly one of those issues.

We're going to be covering not just modernization of the weapons systems, but also of the labs and the support capacities that are essential for a continuing nuclear weapons arsenal. We're going to be looking at some of the reasons around safety, security and reliability, but also ask questions about whether there is a need to also think about the changes in capabilities that are required with warheads and their delivery systems. Is there a certain level of risk involved in not modernizing or not engaging in parts of the modernization process? And where does it leave the state of expertise if we just leave it to atrophy?

Before I introduce the speakers I want to just say a quick thank you to Peter and Sarah Piggott of the Air Force Association, to the Prospect Hill Foundation for funding all of this and filling your tummies, and also to Chris Lindborg in particular from the BASIC staff who has been so ably administering this event. So we have two speakers. You know who they are. They need very little introduction, but let me do it anyway.

Linton Brooks, who is an independent consultant, senior adviser to CSIS, distinguished research fellow at the National Defense University, and adviser to four national labs. He has 50 years experience in national security in one way or another, and his last significant post was as the administrator of the NNSA from 2002 to 2007.

He's up with Hans Kristensen, who is director of the Nuclear Information Project at the Federation of American Scientists, and the source of a lot of information in the public domain, for which he publishes in areas such as the Bulletin of the Atomic Scientists, the SIPRI yearbook and on his own blog. He previously has worked at the NRDC, at the Nautilus of Berkeley and as a special adviser to the Danish Ministry of Defense.

Gentlemen, the table is here, if you could come up and sit at it. And I believe Hans is going to kick off.

MR. HANS KRISTENSEN: Thank you, Paul, and thanks, Peter, and the sponsors and everybody who has contributed to making this possible. Obviously I'm both honored and somewhat overwhelmed to be here on a panel with Linton because, of course, he's been working on these issues since before I could even pronounce the word nuclear. But here we are, and I've been asked to talk a little about the issue of nuclear modernization and the context that I see it, some of the challenges that are facing us.

And, of course, it has become – the term nuclear modernization – has become somewhat a controversial term. You know, it may have gone hat-in-hand, arms control and

modernization, in the past. But these days, we have a new, sort of era of a vision of moving decisively toward deep cuts and eventually elimination. The question, of course, is how quickly?

Nonetheless, in my view, it does challenge some of the traditional ways of thinking about the relationship between arms control and modernization issues. Supporters of reducing the numbers and role of nuclear weapons, they see it as a contradiction of the arms control and disarmament vision, ultimately, presented by President Obama in Prague, where he also said that he wanted to put an end to Cold War thinking, which is a tall order. Now supporters of modernization see it as a natural consequence of maintaining a safe, secure and effective nuclear arsenal, as long as nuclear weapons exist, which was the other promise made in Prague.

During the heated debate over the New START Treaty Congressional opponents extracted a pledge from the administration to spend on the order of – well, the number being used has been \$214 billion over the next decade to modernize the nuclear forces and the infrastructure. Given the fiscal realities, we'll see how much of that actually appears. I see nuclear modernization as a dilemma for the administration's arms control and disarmament message because modernization, especially if combined with protection of the existing force structure, inevitably will be seen by the international community as saying one thing and doing another. Some will begin to ask, what has actually changed except for slicing a little here and there in the force structure?

So putting an end to Cold War thinking will require a great deal more. We're now at a crossroad where decisions will have to be made about the next generation of key components of the nuclear posture. The decisions we make now will cost enormous amounts of money, lock us into a force structure for half a century, and influence how adversaries and allies adjust their postures and attitudes for the next decades.

The basis for these force structure decisions tie in with the White House nuclear targeting review that is nearing completion. The decisions and scope are not known, but the review is intended to identify new reductions that can be pursued with Russia and possibly others. This includes adjustments in targeting requirements and alert levels, including whether it is still necessary for the military to plan against a Russian surprise nuclear attack, a scenario the intelligence community has already concluded will most likely not occur.

So the force structure analysis conducted in preparation for the New START Treaty and the Nuclear Posture Review protected the existing force structure. And it was based on presidential guidance that had been in place for some time. This force structure is bloated, in my view, and will increasingly be out of sync with where Russia is heading, which is already

declining below the New START Treaty. The U.S. must adjust its force structure to demonstrate that it intends to follow Russia and avoid that a large U.S. force structure, as well as additional warheads for uploading, deepen mistrust and drive worst-case planning on the part of Russia and other adversaries.

The most immediate decision concerns the Ohio class replacement, a ballistic missile submarine, where the Navy has selected a design that is about 2,000 tons larger than the current Ohio class. But it only includes 12 boats and 16 missiles, compared with the 24 missiles and 14 boats that we have now. Long-lead procurement is already underway and purchase of the first boat is scheduled for 2021, with the first boat sailing on a patrol in 2031. That's 20 years from now.

The current SSBN force, as I see it, is bloated both in terms of boats, missiles, warheads and operations. To meet the New START limit the Navy will start emptying four of 24 tubes on each boat beginning in 2015. That will leave 20 missiles per boat for a total of no more than 240 deployed missiles. But, given that the U.S. has already decided to transition to a SSBN fleet of only 12 boats with 192 missiles, the U.S. could and should cancel the refueling and overhauls of the next two SSBNs, retire the boats, and reduce the loading of the remaining 12 boats to 16 missiles each, the same that we planned for the next generation anyway.

These are decisions that can be made now that will save money in the short term and send a clear signal about intentions overseas. By the end of the decade the SSBN force will carry about 70 percent of all U.S. deployed strategic warheads. Currently, each missile onboard carries an average of about four to five warheads, and there is a large inventory in reserve for upload if necessary. And the New START Treaty will almost, primarily, have to harvest warheads from the ballistic missile submarine force.

Now of course there's nothing but StratCom's interpretation of presidential guidance that requires the United States to retain 12 boats. The force could be trimmed further to 10 or even eight. No other nuclear weapons state in the world is building more than eight SSBNs.

The ICBM force is equally bloated and should be reduced. The Minuteman III has been life extended through 2013 and can probably be extended further with relatively modest investments. No decision is needed soon on a replacement ICBM, but a study is already underway to study alternatives to the current force posture, potentially even a mobile ICBM.

Up to 420 single warhead ICBMs are planned under New START. This is an unnecessarily large force, especially considering the warhead upload capability that will continue to exist. Russia is heading towards an ICBM force of perhaps half that size, mainly due to retirement of three types of old ICBMs over the next decade. To maintain some form of parity and to counter

worst-case planning, the U.S. should at least cut its ICBM force to 300 missiles by retiring one squadron at each of the three bases. The force could be trimmed even further, and StratCom Commander General Cartwright has, in cooperation with Global Zero, even recommended eliminating the ICBM force altogether – striking to get such a proposal from a person who just a few years ago was in charge of that part of the posture.

The bombers do not serve a day-to-day nuclear role, but are mainly conventional platforms. That will also be the case for the next generation bomber. But when asked which leg of the nuclear triad to cut, when people are asked these issues, most people say, intuitively, the bomber. Perhaps I'm not personally convinced that it would be smart to switch to a dyad made up entirely of fast flying ballistic missiles.

Rather than whether the bomber should be nuclear capable, I think the biggest question seems to be whether it's necessary to equip it with a new cruise missile. That standoff mission is now limited to 44 B-52 bombers. But given the development in conventional cruise missiles and the growing range of adversarial air defense capabilities, I'm not so sure that a nuclear armed air-launched cruise missile mission is relevant.

Now then, we have the non-strategic nuclear force. Some people sometimes call that the fourth leg of the triad. The non-strategic force is being trimmed and modernized. The trimming concerns the decision to retire the nuclear Tomahawk cruise missile, and no replacement is planned. Dual-capable aircraft includes the F-15E, the F-16, the Tornado in Europe, and the Air Force plans to add nuclear capability to the F-35 Joint Strike Fighter from the early 2020s.

Now despite interest by some in Russian non-strategic nuclear weapons, the fiscal constraints here and overseas, and the decreasing relevance of tactical nuclear weapons in general, I think the dual-capable aircraft mission might be headed for retirement in the foreseeable future. The reassurance of allies, in my view, must be based on real reassurance, not a patchwork of left over capabilities from the Cold War.

That brings me to the warheads, where our current stockpile currently contains about nearly 5,000 warheads, down from the 5,113 in 2009. Those were the numbers that were declared by the administration at that time. The Pentagon's strategic guidance, published earlier this year, states, quote, "It is possible that our deterrence goals can be achieved with a smaller nuclear force, which would reduce the number of nuclear weapons in our inventory as well as their role in U.S. national security strategy," unquote.

So it seems inevitable that we're going to see further reductions in the stockpile even in the short-term. The stockpile size has never been directly affected by arms control agreements,

but those days will be over if efforts succeed in broadening arms control to non-deployed warheads. Yet unilateral stockpile reductions have been made repeatedly in the past, and should and will likely be made in the future as well.

The stockpile currently includes seven basic types that have been converted into 14 different versions for a variety of reasons and missions. But of those, about 11 are active in the stockpile. In the foreseeable future we're going to see consolidations of those warhead types and versions. We already have full-scale production going on of the W-76 warhead, which is coming out as a modified version called the W-76 Mod 1. And the message is that four versions of the B-61 nuclear bomb are scheduled to be converted into the new B-61-12. As far as I can see, it's more about extending one of them and then cannibalizing components from the three others. Nonetheless, that is presented as somewhat of a consolidation that will lead to reductions in the other numbers.

A common warhead is envisioned for the W-76 and W-88, and some of these efforts would lead to reductions, others less so. It's still very murky how this will pan out. But there are two primary interests in these future warhead conversions that I think is important to emphasize.

One is that the reliability of whatever comes out at the other end of the pipeline is sufficient to avoid a need to resume nuclear testing. That goal, in my view, is essential. The other is that the current guidelines of the NPR are not weakened. They state that the United States will not develop new warheads, that LEPs, life extension programs, will only use nuclear components based on previously tested design, will not support new military missions or provide for new military capabilities, and that the replacement of nuclear components would only be undertaken if anything else fails, so to speak.

In future warhead modifications, the addition of new safety and security features should be limited to those that are critical, based on specific threats and errors on a case-by-case and cost-effective basis. Right now, there seems to be sort of a – if you can add new safety and security features, go for it. From a safety perspective it would be best if warheads have insensitive high explosives and fire-resistant pits, of course. But this may not always be possible without reducing warhead reliability, fiddling too much with the design, or increasing the need for nuclear testing.

Now the B-61 life extension program is already turning into a case study of what not to do. Overly ambitious design changes and additions, with completely in my view unrealistic time tables, have exploded the project into a management scandal with an estimated cost hike that



has increased from about \$4 billion in 2010 to more than \$10 billion now. This is unsustainable, and the mismanagement actually threatens the mission itself.

In order to prioritize the B-2 mission, the strategic bomber, the administration should consider a barebones upgrade of the B-61-7, the strategic version of the B-61, which was partly life extended a few years ago. The non-strategic versions, in my view, should be phased out. And the United States, of course, should work with NATO to make that happen. That would avoid adding the guided tail kit, which I find is a very troublesome development that will unwisely and unnecessarily increase the military capability of NATO's nuclear posture, and re-introduce a more useable weapon similar to the Air Force's "plywood" [PLYWD] design back from the 1990s.

So, a few words about the infrastructure. Similar to the B-61 design, the status of the production complex is threatened by mismanagement and budget overruns. We've already seen the plutonium handling facility at Los Alamos being mothballed for at least five years. Who knows if it will live on beyond that? But in terms of money, it is certainly in a tough spot. And the uranium processing facility at Oak Ridge in Tennessee, both of them are in such a flux that I think the mission for the whole – the basis for warhead sustainment in the future is under threat.

Instead of focusing on such gold-plated icon projects, I think the administration has to scale back the ambitions to maintain a project based on the expectation of a significantly reduced stockpile, which is where we're headed. This may require significantly re-thinking current plans and operating existing infrastructure, of course.

So in conclusion I'll say that whatever one might think about nuclear weapons modernization, it's important that it is in sync with arms control and disarmament objectives and not appear to be contradicting each other. And I think that's an inevitable problem in where we are right now. This requires constraint, inevitably.

The United States cannot declare that it is invigorating its efforts to reduce and eliminate nuclear weapons, and then embark at the same time upon a nuclear modernization plan that reaffirms and rebuilds the entire nuclear triad and the warhead production complex. The two messages contradict. Putting an end to Cold War thinking, in my view, takes a lot more than trimming the nuclear force. It actually requires changing it.

So with those remarks, I thank you for your attention and look forward to your questions.

(Applause).

MR. LINTON BROOKS: It's important at the outset to stress the areas where Hans and I agree. We're both very happy to be here and have the opportunity to talk to you.

(Laughter).

Now let me move to a couple of places where we may not completely disagree. But let me start with three premises that at least inform my views. First, whatever the merits of abolition of nuclear weapons – and some of you know I am a skeptic – it is so far in the future that it should play no role in decisions about modernization over the next decade or two.

Second, an increasingly important function of the U.S. nuclear deterrent is to reassure our allies. Our allies are best reassured if we don't appear to be significantly weaker than any other nuclear power. As a practical matter that means Russia.

And it is the perception among our allies that matters, rather than simple numerical comparisons. It is almost certainly true that we could deter direct nuclear attack on the United States with a vastly smaller force. It is also largely irrelevant as long as the United States wants to maintain its position of leading a global alliance.

Hans mentioned his concerns over maintaining nuclear capability in Europe. And I'll simply point out – and he said we must base reassurance of our allies on real capability. And I agree with that.

We must also base reassurance of our allies on what our allies think. And our allies have had two opportunities in the last three years and have unanimously strengthened the importance they ascribe to the nuclear component of the NATO alliance. So that doesn't mean you can't decide you want to do it. It does mean you can't claim you're supporting your allies and decide you want to get out of that.

Third, I don't see any need for new military capabilities associated with nuclear weapons. So to me, when I say modernization it means maintaining the existing capability in some fashion.

And finally, Hans mentioned the word nuclear testing several times. There's not going to be nuclear testing in the United States. No sane person thinks there is.

Nobody I have met in government in the last 15 years has the slightest interest in it. I had a massive group grope when I was in NNSA with everybody, and the nuclear testing discussion lasted five minutes in a day-long meeting. Nuclear testing is a red herring. There's no technical need for it and there's certainly no political support for it.

So those are the predispositions I bring to looking at modernization. But let's talk about warheads, delivery systems and the infrastructure. And I want to start with delivery systems.

I believe that the United States should maintain a nuclear triad for at least another 15 years. There's no economic, political or strategic advantage in eliminating any leg of the triad in the near future. That's partly because you don't save very much money in eliminating a leg of the triad in the near future.

When there's big bucks involved is whenever it becomes necessary to replace Minuteman. 2030 is the current estimate, and Hans suggests that could be extended. I don't – that's not the analysis I have seen, but I am willing to accept that.

Whenever we come to where we have to spend big bucks to replace Minuteman, that's the time to have the debate on the triad, not today. As long as we have the triad – therefore as long as we have ICBMS – the current policy of single warhead only is a good policy and it should be retained. Hans notes that Russia is reducing its number of ICBMS, and that's true. But it is not reducing its number of warheads. We use to call that "instability" back in the bad old Cold War days I'm not supposed to think about anymore.

Development of a replacement for the Ohio class should proceed on the current schedule with a lot of emphasis to cost containment. Because, however, it's hard to back-fit survivability into a submarine, and because it's plausible that the Ohio replacement will still be operational 50 years in the future, cost containment should not come at the expense of survivability. Right now the existing Ohio class will operate longer than any nuclear submarine ever, by any nation, by a non-trivial amount. And therefore the risk of assuming that we can do further delay is probably too high. We've basically used up that slack in the five year delay that the administration recently announced.

The decision on when to acquire a new strategic bomber should be made entirely on non-nuclear grounds. What bombers do on a day-to-day basis is conventional. And when we need a new bomber to do conventional, then that's when we should have a new bomber.

When such a bomber is deployed, I believe it should be made nuclear capable. The incremental cost of nuclear capability is not huge. The costs of a new bomber will be fairly significant.

And like Hans, I am not – for different reasons – I am not entirely comfortable with a ballistic missile only force. We use to, in the Cold War, say we wanted both land and sea basing and both air and ballistic penetration. Given that we can have that for a while longer at relatively little expense, I think that's what I would do.

A decision on whether to replace the air-launched cruise missile, probably the most important real decision we're going to make in this decade, probably needs to pay some attention to the military view, which appears to be evolving. And I don't think we know enough now to know whether it makes sense to have a new standoff weapon. But, it's a non-trivial sum.

Finally, I guess I differ with Hans on the value of unilateral reductions. I don't see any evidence that the Russians are going to match such reductions. In terms of numbers of missiles, they are leading us. But you will notice that in order to keep up their warheads numbers they are now talking about a heavy liquid of the kind we spent 30 years trying to get out of because of their destabilization capabilities.

And I think that a lot of Han's specific suggestions on shrinking the ICBM force somewhat, doing something with the existing submarine force, those may or may not be acceptable. I think we have to wait for the targeting guidance. But even if they are acceptable, I would prefer to make them in the context of an arms control agreement.

Doing these things cost money in the short run, although they save money in the long run. And at a time when Russia is stonewalling on new negotiated reductions, I don't see the logic of spending money to show the Russian Federation that they actually don't need to agree to reduce anything and we'll reduce anyhow. So that's sort of where I am on force structure.

Let's talk about the weapons themselves. Everybody knows the U.S. stockpile is too large. It's too large both in strategic terms, it's also too large in tactical terms.

I mean, we probably can't maintain a 5,000 warhead stockpile for a long time. You can find internal documents that are unclassified and in the public domain that throw around planning numbers like 3,000, which suggests that even the technical people are sort of assuming we're going to have a significant reduction. Here too, however, I would be somewhat cautious about unilateral reductions.

The experience of the last 12 years suggests that unilateral reductions in the total inventory, such as the George W. Bush administration cutting the inventory exactly in half, gained no particular domestic credit and no particular international approval. And so I think that unilateral reductions, if not handled carefully, may raise suspicion among those allies for whom reassurance is most important. So I would reduce the total stockpile below 5,000 only either in the context of an agreement with Russia or after a pretty careful explanation to our allies and the American public about why this is in our interest.

And this is particularly true because as most of you know, reductions in the total stockpile are somewhat smoke and mirrors, since the same warheads will stay in the same location and just be put in a queue for dismantlement, which now extends well into the 2020s. So I think we have to be careful that for no actual gain we don't provide inadvertent concern to our allies. With that exception, there's no particular reason to keep 5,000 warheads in the stockpile.

I believe that we should move to a force of all insensitive high explosives. That's partly because I believe these things are going to be around longer than many would wish and longer, I think, than Hans probably assesses. And I think that given that we only extend life infrequently, that's the time to do insensitive high explosives.

Other safety and security improvement should be judged exactly the way Hans says, on a cost-effectiveness basis. And my guess is there's almost nothing – there's some really wonderful ideas out there, but there's almost nothing that's going to meet that hurdle over the next 15 or 20 years given the fiscal reality. I think that the United States should permanently embrace and internalize the notion that refurbishment and reuse and replacement of nuclear components are all acceptable strategies.

Today we have seven basic types of nuclear weapons: two ICBM warheads, two submarine warheads, two bombs and a cruise missile; and many of those have variants. The diversity certainly is a technical hedge, so if we discover a problem with one ICBM warhead there's another one there. But maintaining that many designs is inefficient and I think that we should move first to three ballistic missile warheads.

Hans reminded you that we are on a path – it's not, unfortunately, quite as clear as he suggested – for the design life extension for the W-78 ICBM warhead to also be able to serve in some sense as a replacement for the W-88 submarine warhead. We should move in that direction. And on a longer term basis, and particularly depending on what we decide to do about the air-launched cruise missile, the country should also move from the current three warheads in air-breathing systems -- two bombs and a cruise missile -- to two, each capable of substituting for the other.

Finally, let's talk about the infrastructure. The most important part of the weapons infrastructure is the intellectual capability of the national laboratories. The Strategic Posture Commission stressed that that was important, and that was one that had to be preserved, because it's the hardest to rebuild.

Since great weapons science grows from great general science, that means the laboratories need to continue to maintain broad technical capabilities, and we need to organize

ourselves in a way to let that happen without inflating what we spend on weapons. With regards to specific facilities, I'm extremely disturbed by the delay in the Chemistry and Metallurgy Research and Replacement Facility in Los Alamos, but not for the reason most people are. I'm disturbed because the political class, including those who work within a few blocks of where we're standing, keeps telling the executive branch, you need to make hard decisions.

So my successor made a hard decision. He didn't do what we have historically done, stretch out every program a little bit and assume we're going to get more money in the out-year. He essentially moved one of the major facilities far into the future. He did it after devising a strategy that shows you can meet DOD requirements.

I think, frankly, if you don't want administration officials to make tough decisions, you probably ought to think about how inherent supporters react when they do. I think this is the right decision. Ideas of reversing it are not strategically necessary and they're almost certainly not politically and fiscally possible.

I think that we should continue with construction of the Uranium Processing Facility in Tennessee. Right now, that is – Hans used words like unclear and management disaster, and it would be very hard to argue with him on those points. But the problem is that the alternative to that facility is a fairly substantial safety and production risk.

So I think we need to continue that. We're probably going to have to spend more money to patch up existing facilities because it's becoming increasingly clear that the current schedule and cost are probably unrealistic. But I think that is an area in which, unrelated to the size of the stockpile, we need to have the ability to work uranium components.

So those are my thoughts. As you can see, they only differ from Hans in minor ways, and I'm looking forward to your suggestions.

(Applause).

MR. INGRAM: Well I think, Linton, there was a little more agreement than you hinted at the start. I think there were plenty of areas to get our teeth into. As you can see, controversy abounds, differences of viewpoints. I would like to welcome you to consider questions or comments or statements, but I would also invite you to exercise the brevity and conciseness that this town is so famous for because there's a lot of you and I'd like to try and wrap up in the next 30 minutes. So, who would like to kick-off?

Yes, sir, if you could introduce yourself as well?

MR. TODD JACOBSON: Todd Jacobson with Nuclear Weapons and Materials Monitor. Linton, I wanted to follow-up with you on something that Hans had mentioned. It deals with the management problems with a lot of the modernization efforts at NNSA. Hans specifically mentioned UPF and CMRR and the B-61. Hans said those kinds of problems are a threat to the mission overall. I wanted to get your thoughts specifically on those issues and the impact you think it will have on modernization going forward and if you kind of share the same worries about the overall mission.

MR. BROOKS: Well first, as I just said, I think the deferral of CMRR was a sound management decision. I think what we have learned from the B-61, among many other things, is that the mere fact that we know how to do something and that would be really good to do, doesn't make it the right thing to do in a fiscally constrained environment. The 61 life extension program is the most complex life extension program we've ever done. I think it may have taken a while for those not directly involved to tumble to that fact because it's, quote, "a non-nuclear extension," so it must be easier.

And it turns out actually that's not true. It's not easier. It's more complex.

And I think that what we learned from that is that we really need to be pretty ruthless in looking at just how much better we have to make things in order to extend their lifetime. I'm just not, Todd, in a position to comment on what we learned from UPF. I'm not privy to the latest details other than what I read in your sheet and others.

And so, in general when you can't estimate costs that's not a good thing. But high-hazard, one of a kind nuclear facilities historically have been extraordinarily difficult to cost. There was an analysis done about 10 years ago looking at such facilities, not just those in the Department of Energy, that suggested that the uncertainty required a level of contingency in the planning that is simply unrealistic in our system.

So we appear to have a systemic situation in which the first time we do something we're going to underestimate the cost. You see that in DOD. You certainly see it in our major facilities. We ought to find a way to fix that because it will, as Hans said, hamper the mission. But I'm just not in a position to tell you what that way is.

MR. INGRAM: Thank you.

Yes, sir.

MR. DAVID ISENBERG: David Isenberg, a question for Mr. Brooks. You said in the beginning that the prospect of nuclear weapons abolition was so far off in the future it should

have no bearing on today's modernization decisions. I'm wondering, what signs or conditions in the world, in the future, would have to be present that would signify that abolition is or could be some sort of viable reality, that decisions about modernization would then be appropriate, if any?

MR. INGRAM: Thank you.

MR. BROOKS: States have nuclear weapons because they think it enhances their security. So you have to look at people who appear to have an enduring need to have their security enhanced. The Russian Federation is going to be conventionally inferior and has not gotten over its view of the United States and NATO as an enemy. Look at the 2010 military doctrine and the main threats to the Russian Federation, and they look an awful lot like us. So you have to find a way to solve that.

Pakistan will always be next door to a country that is four times its size and that has pretty consistently beaten it in conventional battles. So you have to find a way to remove the belief that they need nuclear weapons.

No political leader in China could survive Tibet or Taiwan declaring independence. I don't think either of those are very likely, but the ultimate guarantor against our intervening is nuclear. So you've got to find a way to get around that.

If Israel has nuclear weapons, which many believe, they will be surrounded by a group of hostile neighbors. They have been for 5,000 years. There's not a lot of evidence that that's going to get better. So you have to deal with that.

And you can believe you can solve any of those. You have to believe that they all get solved at once, and that they stay solved long enough for us to devise a verifiable regime. And that we come up with an enforcement mechanism that doesn't depend on the Security Council veto. So it seems to me that's a transformation of the international system that is pretty close to world government. And I am with President Obama, not in my lifetime – that's what he said. And his lifetime is another 30 or 40 years actuarially. , so I think we're a ways away from the time when we need to do this. The goal, whether it should be an espoused goal is an entirely separate question.

MR. INGRAM: Just to correct you though, Linton, he said probably not in his lifetime.

MR. BROOKS: Probably not in my lifetime.

MR. GREG MELLO (ph): Greg Mello, I'm hearing a disconnect which we often hear. And I'd link, Linton, your comments on this, especially since you were there in the hot-seat for five



years. You both agree that the crisis of management in the nuclear weapons complex is very serious and could affect the viability of the mission.

And yet, in this town, when we talk about some of the major issues we do so only in general terms. We're worried about the viability of the weapons laboratories. They consume a large part of the budget. Yet we talk, as you've done here today, of course for the sake of brevity, in general terms.

And UPF is another one. Our vision does not extend in detail into these problems, and yet we all decry them. How shall we get around that?

MR. BROOKS: Well first, for at least some attempt to go into more detail, I refer you to the Strategic Posture Commission and the volume, in the eyes of the experts, which contains some background papers, some of which appear to have my name on them, which provide at least from the management standpoint, a series of options. We don't discuss the technical details of management of major projects in public fora. And that's probably right because what I think I learned is it's really hard and it's really complex and it really takes a long time to wrestle with.

And if you're in a 30 minute hearing, that's not where you're going to be able to lay that out. So I think there are people who wrestle with that. I freely admit I didn't try to do that in my remarks. And on a couple of these things, UPF in particular, I don't know enough.

MR. INGRAM: Thanks Greg.

Yes, sir.

MR. GREG THIELMANN: Greg Thielmann, Arms Control Association. Linton, you stressed several times here a concern about the perceptions of allies regarding U.S. strategic forces. So I just wondered – and you're also very dubious about unilateral reductions. I wonder if you could just elaborate a little bit on how the allies would perceive U.S. unilateral reciprocal reductions, that is following the Russians down below New START numbers? If both sides were down to 1,000 or whatever, under New START limits, would the allies be shaken in their feelings about U.S. resolve?

MR. BROOKS: No, I don't think so. I mean, presidential nuclear initiatives of the early '90s were a series of reciprocal unilateral actions, done in a moment of euphoria that doesn't exist now. But our allies clearly didn't see a problem. I think the allies --

MR. THIELMANN: Not in a treaty framework, that's a big difference.

MR. BROOKS: What?

MR. THIELMANN: Those unilateral reductions were not in a treaty framework.

MR. BROOKS: They were not in a treaty framework. I'm sorry, I thought what you were talking about was similarly, without doing a new treaty, just having both of us sort of settle out at lower levels. And I don't think our allies – I think our allies don't over analyze this. They just want to make sure that it's a big guy who is standing up for them. I think it is psychological as much as it's analytic. So as long as we can look people in the face and say we're second to none, I think that scratches the allied itch.

So if the Russians come down, I invite you again, what blows up is the warheads. And the Russians are not nearly as dramatically lower in the warheads as they are in the delivery vehicles. But if the Russians were to come down, and the United States were to match it, I don't see that that's a bad thing.

MR. INGRAM: Hans?

MR. KRISTENSEN: Yeah, let me follow up on that also and say on the perception of the allies I think it's important to keep clear of a nuance here which is that yes, of course, the allies are interested in a overall strong capability. But it doesn't mean they're necessarily hooked on all the details, if you will, and want to see every aspect of what's currently in the posture and maintained. Yes, we've had a debate over the role of nuclear weapons in NATO. But when I look at that process I see as much of a compromise between very different views as I see a consensus, a unanimous decision that says let's keep everything we have.

They're generally interested in having certain capabilities. They are certainly reaffirming a general role for nuclear weapons. But short of that headline, I think there's a lot of room to maneuver.

And I think many of these allies are the same allies who go out there and talk about the importance of reducing nuclear weapons and the importance of moving on. And they vote in the United Nations, and several allies do as well, voting for reductions in this, that and this and that category. So there is a general perception and a general interest in maintaining a certain degree of capability, but I don't think it means that the allies are necessarily vested in all the components underneath that headline.

MR. BROOKS: Hans is right on that.

MR. INGRAM: It's not just the United States that's complex in its policy making and posturing. Are there any other – yes.

MS. : My name is Ablam (ph), with CMS. If I was to summarize the two speakers of today, I guess the Hans Kristensen headline would be we say one thing and we do another in the eyes of the world. And what do we make of it in terms of modernization?

And what Mr. Brooks is saying is that with modernization we have to make sure that we convey an impression that we are maintaining our strength. So my question would be, well, you talk about the allies, but what about the enemies? Will this posture of let's maintain this position of strength -- how do we convey the credibility of the message that we are going to disarm?

MR. BROOKS: That's an excellent question, which we have not done well on because we are divided internally in this country. Everybody loves half the Prague speech. They either love the half of seeking the security of a world without nuclear weapons, or they love the part that says they're going to be safe, secure, reliable and effective until that world comes about.

I happen to love both of those. I think that they complement one another and that whenever we set up a tension between ultimate goals -- which I'm skeptical will happen in the near term, but ultimate goals, and maintaining strength until then -- I think we don't do ourselves a service. And the problem is because everybody loves half the Prague speech they tend to hype the half they love.

I think we need to focus more on the fact that these two are consistent. Hans made the excellent point that modernization and arms control needed to be mutually reinforcing. At the moment, we're not likely to do any arms control for the next four years because the Russians don't seem interested in playing. But whenever that time comes, we do need to make them minimally reinforcing. As far as how you convince people that they're not enemies, I'm not sure your nuclear posture is the most important element of that.

MR. INGRAM: Thank you.

Yes, sir.

MR. ED HELMINSKI: Ed Helminski, Nuclear Deterrence Summit. Linton, or all three of you actually, one of the things that seems to have happened over time, when we started out looking at restructuring the NNSA there was an emphasis on the safety and security of those facilities, which are aged. They're falling apart.

Then there was a move to separate those two initiatives that I think was a mistake. But I'd like your views on that. The fact of the matter is modernization carries with it a connotation -- and has for the last year and a half or two years -- building new weapons or having modern

nuclear weapons. Where really our system, the whole structure of our weapons facilities is dangerously unsafe from what I can gather from dealing with the cleanup program in the weapons complex.

How do we get this message over regarding – was modernization the wrong word to use? Because connecting restructuring the system, restructuring the weapons complex to be safe and secure, which is necessary -- you have a garage which is falling apart, if you want to put a naïve example on it. What's your view of what happened in that disconnect?

MR. INGRAM: Let me turn first to Hans. Are there elements of modernization you would strongly support given that if it's just left to rot that's extremely dangerous?

MR. KRISTENSEN: Absolutely, I mean I think it's a no-brainer that to the extent where you have facilities that are in dire straits of fix just because of basic security and safety issues, to me that's maintenance. It's not modernization. And I think there is a messaging problem there.

It almost reminds me of when we started talking about the Reliable Replacement Warhead. You know, there was also a messaging issue there, and likewise on this one. So I think in a way you set yourself up by using words like modernization.

I've just been to Europe where I, among other things, briefed one of the subcommittees on the foreign affairs committee. And what was really striking during that conversation was how uncomfortable they were about anybody in the room using the word modernization about the B-61 life extension. You can talk the details, but it has a real – it rings a certain message in the public debate, absolutely.

MR. BROOKS: Hans is right, and the other word is the word new, alright? If you take a warhead and you take it apart and you replace a bunch of components and you put it back together, is it a new warhead? Well if you're an engineer the answer is, of course it is. If you're trying to get funding for the program, then the answer is, of course it's not.

(Laughter).

And so I think we don't have a good word for improving old things so they'll remain effective. So we've settled on modernization, and for those to whom modernization means new military capabilities, that's problematic. As you know, Ed, I tried to find ways to say this for five years, so I'm the wrong guy to ask about how we ought to say it.

MR. INGRAM: Thank you.

MR. VIC TEPLITZ: Vic Teplitz, what are the chances of getting more plutonium so that NASA can explore the outer solar system?

MR. BROOKS: My understanding is that that's actually – that there's a plan now to re-start the 238 production. But I don't have the details, Vic. Let me talk to you about it off-line. We were at gridlock for a very long time on that and my understanding is we are no longer, but I don't have the details.

MR. INGRAM: An interesting point there. There are more than just military applications.

MR. SKIP WILLIAMS: Skip Williams with Rand. I don't think the speakers have really approached the human capital part, which I think is one of the elements that's going on as the labs and also as the operational forces sustaining the capability within the departments contracts. We have fewer people and if you don't have the right priorities and the right decision making and the right understanding of what it is that's important in terms of these programs, operationally and for sustaining, that may be difficult for the future. Any comments on that? Particularly for NATO, as you detract further operational interaction and other decision makers capabilities on that – as you get further and further away on that, as you said, they really don't know how to value this.

MR. KRISTENSEN: Well, obviously you need the human capital in the system to be able to do anything. But it's also interesting as we transition out of the Cold War nuclear warhead production kind of nuclear posture the kind of people – I mean, we hear the stories about there are fewer and fewer people who have actually been part of a nuclear test and things like that. And, of course, that's a dilemma.

But on the other hand, that's where we're going. They're not going to come back. Nuclear testing is not going to come back. So we have to figure out, how do we do with the capital that is in the system and that is being raised in the system, working through simulation facilities instead? So that's on that one.

On NATO, I think it's a very good point, very astute, in the sense that the reason we got this kind of almost nonsense DDR that came out of NATO recommending the status quo, I think is exactly because you've had two decades where no one inside has been asked to think hard about these issues. In fact, we didn't deal with the nuclear weapons in NATO in any particular manner. I mean, it was left to the managers at various levels.

Suddenly, comes the message from upstairs, now think about how we do this in the future. And gee, guess what they do? I mean, a lot of it is reaching back from the old days and coming up with context and formulations and words that we use to use.

And out of this grows this sort of oh, the current posture is just about right. So I think it works both ways, both on the engineering side, so to speak, but it's also on the policy side. If you don't have officials that are working these issues on an ongoing basis, you're not going to get good results. Or, the kind of results you're going to get are very messy and unproductive.

MR. BROOKS: I tried to make the point about the labs. The labs need to be structured so that they attract the best and the brightest. We've always drawn people into the labs because of great science and then migrated them into the weapons program once they got there. And there's no particular reason that that strategy can't continue. The labs have some enormous intellectual and experimental tools that don't exist anywhere else, but we have to be conscious of it.

The production plants, I think people take care of themselves. I mean, what we're doing now, the motivation for taking apart warheads and putting them back together may be different during the Cold War, but the training of the people is the same.

The military, I think, is a risk. We saw the Minot incident. The Air Force has responded to that with enormous seriousness.

But there's a long history of major reforms and then when the spotlight goes someplace else you drift back. And I don't know that -- the Navy, for a variety of reasons, seems to have dodged that bullet mostly because we got rid of TLAM-N where we would have had exactly the same kind of -- I don't pay attention to that because nobody will ever let me use it. It's not my real job. And we dodged that bullet by getting rid of tactical weapons. I think that the Air Force is going to have to continue to work hard to maintain that capability.

On policy, you know, policy starts at the top. I served in the previous administration, but there is more attention in the average week, by people who had to be confirmed, to nuclear policy in this administration than there was in all eight years of the last administration. And that's because the president is intensely interested.

If the president is intensely interested in nuclear issues, then the system draws people who understand them. If the president, or arguably the secretary of Defense, is not interested in nuclear issues, then people focus elsewhere. I don't know what you do about that.

I mean, for the next four years you don't have to worry about it because the president is intensely interested and there are a number of people – you may disagree with their specific approaches – but there are people who can really have grown up conversations at very high levels in the administration. I don't know how we make that happen because nobody votes for a president based on does he or she have a vision for maintaining nuclear policy. That is Cold War thinking that is behind us now.

MR. INGRAM: Well, we've reached 9:30 and I think very few bullets were dodged. And that's an analogy that doesn't really work very well with nuclear weapons anyway. We could go on talking about these things forever.

It's fascinating, but you've got a day's work to put in and I'm very pleased to see so many of you here. I want to thank in particular Linton Brooks and Hans Kristensen for leading our conversation, and I hope you got as much out of that as I did. Thank you very much.

(Applause).