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Federal News Service

March 29, 2007 Thursday

**HEARING OF THE ENERGY AND WATER SUBCOMMITTEE OF THE HOUSE APPROPRIATIONS COMMITTEE;  
SUBJECT: WEAPONS ACTIVITIES OVERSIGHT;  
CHAired BY: REPRESENTATIVE PETER VISCLOSKY (D-IN);  
WITNESSES: SENATOR SAM NUNN, CO-CHAIRMAN AND CEO, NUCLEAR THREAT INITIATIVE; DR. WILLIAM PERRY, FORMER SECRETARY OF DEFENSE; GENERAL JAMES E. CARTWRIGHT, COMMANDER, U.S. STRATEGIC COMMAND; DR. RICHARD GARWIN, IBM FELLOW EMERITUS AT THE THOMAS J. WATSON RESEARCH CENTER;  
LOCATION: 2362B RAYBURN HOUSE OFFICE BUILDING, WASHINGTON, D.C.**

**LENGTH:** 26242 words

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REP. VISCLOSKY: The subcommittee will come to order.

The Subcommittee on Energy and Water Development meets today to hear expert testimony on the U.S. nuclear weapons policy and programs, specifically addressing several new initiatives currently under consideration by the subcommittee.

These issues touch on some of the most profound responsibilities we in Congress are asked to address. I, for one, am pleased to have the opportunity to hear the opinions of individuals who have considered these issues seriously and were responsible for making similar decisions themselves during their service to our country.

If I could take just a moment to introduce the panel, we are honored to have before us today as distinguished a panel of witnesses as I have ever had the pleasure of introducing. First, I would like to recognize General James Cartwright, Commander, United States Strategic Command.

General Cartwright, you are currently charged with supporting the nuclear initiatives we will discuss today, and I do look forward to hearing from you. I know that you have been in high demand this spring as a witness to discuss your many responsibilities before many other committees and subcommittees, although I believe this is a first before Energy and Water. Just for your future reference, General, what do you know about the MOX program?

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GEN. CARTWRIGHT: (Laughs.)

REP. VISCLOSKY: I will now continue, General, but do appreciate your service to our country.

We are also very pleased to have Senator Sam Nunn, a Nobel Peace Prize nominee. And I must say that I have only met one other in my life, and it was your partner, my good friend: Senator Lugar from the state of Indiana and distinguished former senator from Georgia. He chaired the Senate Committee on Armed Services from 1987 to 1995, and he is now the co-chairman and CEO of Nuclear Threat Initiative, a charitable organization working to reduce the global threats from weapon of mass destruction.

Thank you very much, Senator, for appearing today.

We are also honored to have Dr. William Perry, the 19th secretary of Defense, serving between 1994 and 1997, and now a senior fellow at the Hoover Institute and a professor at Stanford University, with a joint appointment in the School of Engineering and the Institute for International Studies.

Dr. Perry, it is a pleasure to have you, as well.

Finally, we are pleased to welcome Dr. Richard Garwin, IBM fellow emeritus at the Thomas J. Watson Research Center. I think that there are only two stories about Dr. Garwin that I will repeat here. Dr. Edward Teller, the principal creator of the hydrogen bomb, credits Dr. Garwin with developing the blueprint in about two weeks' time or less, which made the hydrogen bomb work. And Enrico Fermi, who first achieved the controlled and continuous chain reaction of the atom, declared that Dr. Garwin was "the only true genius I had ever met." Though I cannot claim to know Dr. Garwin well, I did meet with him last week on a different issue and found the conversation enlightening. In finishing the introduction, I would hope someday to read as many books as Dr. Garwin has written.

I'm going to keep the rest of my opening statement very short because I think we will all have an opportunity to discuss the issues during the question period.

The two most profound decisions that I have to consider, as a member of Congress, are issues of war and peace and the change -- potential change in the United States Constitution. In the case of the issues of war and peace, the reality of nuclear weapons demand that the issue of war is addressed with the utmost seriousness. It may be an inconvenient truth, but nuclear weapons are a public policy issue that need to be discussed.

The United States will continue to rely on a safe and reliable nuclear weapons stockpile as a national security deterrent for the future. However, that does not mean we need to have one more nuclear weapon than is necessary for that purpose.

It is time that the nation takes a hard look at the national security strategy and requirements that are supported by our nuclear stockpile, and decide whether both will support our interest in deterrents and nonproliferation around the world.

The Energy and Water Development Subcommittee is responsible for funding the nuclear weapons activities of the Department of Energy's National Nuclear Security Administration. As such, I know that the DE -- DOE Nuclear Weapons Complex is a vital element of our nation's national security posture. However, it is also a rigid, inefficient enterprise that is in desperate need of a complexwide reform. The same could also be said of the government decision-making apparatus that ties us to our Cold War stockpile.

So before we embark upon any suggested path or, for that matter, even to take it, I do believe that we ought to address these issues.

I will ensure that all of your statements are entered in their entirety for the record. And for our purposes today, if we are interrupted with a vote -- we will have a series of amendments and proposals on the budget -- what the intent of the committee is to do is to have members individually go over and vote so we do not have to break the hearing up.

But before I recognize our first witness, General Cartwright, I would recognize Mr. Hobson for any statement he has.

REP. DAVID HOBSON (R-OH): Thank you, Mr. Chairman.

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Welcome, gentlemen.

This is a great panel. I want to thank the chairman for assembling such a distinguished panel to discuss these issues today.

Frankly, we're here today to discuss the future of our nuclear arsenal. Between the four of you, there's roughly 100 years of collective experience regarding this issue. Today, I'm hoping that we can tap into that knowledge and perspective.

But equally significant is the fact that we have before us a, quote, "customer," unquote, of nuclear weapons in General Cartwright from the Strategic Command. And I'm -- I just want to say one thing: When we worked another issue, having General Cartwright there was very helpful in the previous -- when I was chairman of this committee. And I want to thank you for your help in resolving that issue.

And you were fresh, strong voice in that and I can remember coming -- he came into my office one day and I said, "Are you sure you're talking to the secretary?" And he said, "Yes, I am." And he was. Well, I'm not quite sure about that, but he did. And he played a strong role.

For too long, we've heard the NNSA profess that their activities are just a reflection of the "customer's needs." I hope that today we hear an unvarnished account of DOD's mission requirements and how you all believe DOE can best meet them. After all, it is DOD that determines the need for nuclear weapons, and it's DOE's job to meet that need.

At a time when DOE has proposed this ambitious program to develop Reliable Replacement Warheads, coupled with a much less ambitious effort to transform our nation's nuclear weapons infrastructure, we are faced with the more immediate threat of rogue states and terrorist organizations doing all they can to obtain a nuclear or radiological device. It's ironic that the very weapons that kept us safe and helped us end the Cold War now may impose the most intricate security issues for the immediate future. This paradox raises several questions I hope we can discuss this morning.

To achieve the universal goals of safety, security and reliability in a cost-effective manner, should we look to validate and overhaul the DOE weapons complex, irrespective of whether or not we develop a replacement warhead? What is the primary justification for Reliable Replacement Warheads? Is it to meet DOD's military requirement, serve our nation's broader security needs, or as a catalyst for modernization and consolidation of the weapons complex? Or is RRW really about exercising our weapons-design capability to prove that we can still design nuclear weapons.

Another question: Who should bear the brunt of costs associated with RRW, DOD the customer or DOE as the manufacturer? Can we do more than what is promised by the superficial Complex 2030 plan in terms of real cost savings, real consolidation, and finally, real security? And can we accomplish that in our lifetimes and not several decades out in the future?

And finally, the truly fundamental question, especially in light of emerging and unconventional threats: What is the role of nuclear weapons in the 21st century?

These are tough questions with complicated answers, but that is why this subcommittee asked you to appear today. I am hopeful that we can have a candid and thoughtful conversation about our nuclear weapons stockpile and supporting DOE. I expect our discussion this morning will provide the perspective we all need, as we discuss this allocation of scarce resources to NNSA after today.

Senator Nunn, Dr. Perry, General Cartwright and Dr. Garwin, I can think of no subject more daunting, more complicated, and with no greater consequence than our nation's stance towards nuclear weapons. I want to personally thank you for appearing before us today, and I really look forward to hearing your thoughts. Thank you very much.

Thank you, Mr. Chairman.

REP. VISCLOSKY: Thank you, Mr. Hobson.

General Cartwright, if you'd begin, please.

GEN. CARTWRIGHT: Mr. Chairman and Congressman Hobson, thanks for this opportunity.

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One of the objectives that we've had over the last couple of years is to get this debate up and in front of the public. And as you referred, Mr. Chairman, to my opportunities to testify before a large number of committees here over the past few weeks, one thing that has been a recurring theme is to drive home this discussion: What does deterrence look like for the 21st century?

And none of us have a crystal ball, but we have some choices. And those choices need to be debated and need to be thought about in a cognitive way and in taking advantage of what this nation does best, which is to bring diversity to the problem -- diversity in thought, diversity in options, diversity in the way we think about and move forward into the 21st century.

Mr. Hobson, Congressman Hobson, you talked to the threat for a few minutes in your opening comments there, and I think you've captured it very well. One of the things that has struck us, as we have worked our way through at STRATCOM trying to understand what deterrence means for the 21st century, is the realization that whether you want to document off of the fall of the wall, but starting in the early 90s, the change coming out of the Cold War, and the significance of the events that have occurred and the rapid pace at which they have occurred. And you just look at 9/11 and the Afghanistan conflict, the Iraq conflict, the tsunamis and earthquakes and potential for pandemics, all of which have occurred at a pace and a rate that we have not seen in the past.

When you take a look at the emergence of what we have in the past called the peer competitor, but the nation states, the thought process associated with how we look at rogue states, terrorist organizations, individual terrorists and extremists, and that broad threat, and the use of our nation's capability to create a deterrent for the 21st century that devalues some of the things that these people bring to the table. They are empowered by their access to information in an unprecedented way, so they have been able to leverage what has taken nation states years and huge capital, both intellectual and dollars and cents, to develop.

If you look at the nuclear capability that we have today and the potential of someone being able to leverage available information and God forbid but bring nuclear capability to either a rogue state or to a terrorist organization or an extremist, are all things that we should worry about and things that keep me up at night, as the commander of Strategic Command.

Against that backdrop, in the 2000 timeframe, we sought to change what was the nuclear deterrent capability to a broader deterrent capability, and we talked about what was called the new triad. But the opportunity to have offensive capabilities that were not just limited to nuclear, but included conventional, and defensive capabilities integrated together to allow regional combatant commanders, from the DOD perspective, to have the ability to tailor an appropriate deterrent message and capability to those who they have to address and not to have a one-size-fits-all capability, which was really essentially where we were with our nuclear deterrent.

We have started to build those capabilities out over the past six or seven years as we build individual capabilities. And from the standpoint of the conventional side of the house, we have put together what we call a J-series of weapons, but a new class of cruise missiles, both air and sea-launched, have been fielded. New weapons from the JDAM and JASSM, which have brought to the forefront capabilities in the conventional realm better than we have ever had in the past and more credible, which is, really, the heart of having a deterrent is it's credible.

In the defensive side of the equation, over the past few years, we have been able to build a missile defense system both from a national perspective for the long-range ballistic missiles, and a system that is now starting to emerge to be able to engage what is becoming the most proliferated threat, which are short and medium-range ballistic missiles.

To date, they are armed with conventional warheads, but they are widely available; all you have to do is have the cash to purchase them. And eventually it is not a stretch to think that they will be able to deliver weapons of mass destruction on them. They are very short in their time of flight. They react quickly. They emerge, they shoot, and they're gone. They are what we call a fleeting target.

This is a difficult threat.

It is one that is facing more our allies and friends and forward-deployed forces than it is really today threatening the homeland. But eventually those long-range threats are going to emerge and be a problem.

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So against that backdrop, in the 2000 time frame, we also engaged in the opportunity to start to reduce the nuclear stockpile to rebalance this triad in a way that was appropriate. The objective there, in what was called the Moscow Treaty, was to bring our stockpiles down in an unprecedented way. That was focused, and is focused, on those weapons that are operationally deployed, and it only focuses on that sector, but the intent was to bring down, between 2000 and 2012, our stockpiles in a significant manner.

And 2007, which is where we are today, was the halfway point, so to speak, where we were to go back, reevaluate against the capabilities that we had fielded. Had they come up, in credibility and capability, to match the drawdown in the nuclear deterrent? I will tell you in two cases -- first in the drawdown -- we are ahead of schedule, and we are moving more aggressively now because we believe things like missile defense and the conventional capabilities have come up in credibility, and demonstrated that credibility in a way that justifies bringing these stockpiles down.

As we move towards 2012, which was the target area to get to the target amounts of deployed weapons, I see nothing in our way to continue down. I have one operational gap, which I am uncomfortable with and which we are debating, and have for the last two years, and that is to bring to bear a conventional Prompt Global Strike capability.

Today, our Prompt Global Strike is nuclear only. We need to have an alternative to those nuclear weapons. I know that there are issues and worries about ambiguity on this. We've worked our way through that in cruise missiles in the past, we've worked our way through that in artillery, we've worked our way through that in ships, and we've worked our way through that in aircraft. We need to work our way through this in ballistic missiles. We need an alternative to nuclear weapons, because in a Prompt Global Strike, a nuclear-only option is not sufficiently credible to deter the range of threats that we're going to have to address.

Now, the debate, I don't think, has been about whether that comment is right or wrong; the debate has really been more about can we do this in a way that does not escalate rather than de-escalate the conflict -- in other words, this ambiguity issue and make sure we drive in the right direction. We'll work that, but I need, as a commander, the capability to address these targets rapidly on a global scale when it's appropriate, and an alternative to a nuclear-only Prompt Global Strike.

The other piece that I'll -- I'd like to just make a couple of comments on is -- because I know we'll get into this discussion -- is why, for the Department of Defense and for Strategic Command, the Reliable Replacement Warhead is important. There are a couple of issues here that we have looked at in the drawdown of the stockpile -- the operationally deployed stockpile. One is we ought to be drawing down more than just the operationally deployed stockpile. We need to look at this broader than just the context of what is operationally deployed. In that context, we today -- based on the development of the stockpile that we have -- manage operational and technical risk with inventory. We increase the inventory to ensure that we will not be surprised, either technically or operationally. So if a particular warhead has a flaw or if it is operationally not the right solution for the problem that emerges in front of us, we have two or three alternatives, for which we have a complete inventory, to make sure that we're ready when the nation needs this kind of capability, and that we have credible capability. That manufacturing approach to business -- an industrial approach to this creates huge stockpiles.

In the conventional side, with precision and with manufacturing processes more appropriate for the 21st century, we have driven down the iron mountains of conventional weapons to have a balance between modularity that allows us, if a component is bad, to move components around. It also allows us to get diversity so that we're not -- we don't have a single-point failure in any given weapon. And it also allows us to not have to have the huge iron mountains necessary to have two and three replacements for each warhead. That, to me, is critical.

I talk to you at the attribute level; I'm not the one to ask about how you build the complex to do that. But what I am saying is there are 21st-century manufacturing processes and approaches to business that allow us to manage these problems not with huge inventories, but with smart manufacturing processes to drive down the costs associated with these inventories. And for me, the biggest concern is having this many weapons and having to be able to assure that we can keep them safe and secure. If we can draw that stockpile down, that equates to dollars and cents and people who have to guard and safeguard these weapons.

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So these are points I think that we ought to have a discussion about. These are issues that I believe will have a dramatic effect on the size of the stockpile.

The other piece on the Reliable Replacement Warhead are the attributes of safety, security and maturity. They will not have as large an effect on the size of the stockpile, but they will have an effect on how we, who handle that stockpile, act around it. And having the safest, most reliable, most secure weapons, to me, are attributes that we should strive for within the boundaries of the regret factors associated with losing one of these weapons.

Having one of these weapons when they're handled not necessarily to go detonate, but the idea of making sure that - in the past, we've had several instances where we have had aircraft accidents or delivery system accidents where the weapons have been involved in fires and extreme temperatures, et cetera. We've always been able to safeguard those weapons. We've never had one of them go off when they weren't intended to go off. We need to ensure we put the best technology possible towards ensuring that is the way it stays.

And the last piece is security. The security that we have today is very manpower intensive by nature. We have technologies that could help us ensure that nobody gets these weapons, and if they get them, they are unusable. We owe that. The regret factors associated with one of these weapons being compromised are significant. And I won't go into -- I'll let you build your own scenarios. But we do not want to let these weapons in any way, shape or form, fall into the wrong hands and be usable by someone who could acquire one of these weapons.

The last point that I'll make, Mr. Chairman, is -- I really believe this with a lot of passion, and Senator Nunn and I have had a lot of conversations about this -- is one of the ways to approach this deterrence problem is to get up front before conflict -- way before conflict. Efforts like the cooperative threat reduction activity, we need to understand what we did in that activity, and what we are doing, that worked and export that globally to countries -- to help countries help themselves start to be able to work at nonproliferation, counter-proliferation type capabilities, police their borders, report to their neighbors when things are moving that aren't supposed to be moving, detect these things.

This is a very small dollars-and-cents price for a very large leverage, because if we can build a collective defense against these weapons of mass destruction, we can start to affect this problem much earlier, which is where we need to be.

And I look forward to your questions, Mr. Chairman.

MR. NUNN: Thank you, Mr. Chairman, and Vice Chairman Edwards.

Under your leadership and the leadership of Congressman Hobson, this subcommittee, in my view, has been instrumental in stimulating an overdue and very important debate about the role of nuclear weapons in our national security strategy. And so I commend this subcommittee and your committee for, I think, leading this debate and for working together, even where there are differences, to look at the facts and be careful in the examination and listen carefully to witnesses like our distinguished head of Strategic Command, General Cartwright, and Dick Garwin, and our friend Bill Perry today. So I thank you for giving me the opportunity to be part of this discussion.

In 1948, at the dawn of the nuclear age, General Omar Bradley said -- and I quote him -- "The world has achieved brilliance without wisdom, power without conscience. Ours is a world of nuclear giants and ethical infants. We know more about war than we know about peace; more about killing than we know about living." End quote.

It was a pretty powerful quote, I think, but if he were alive today, I think it might really surprise General Bradley to know that we've made it 62 years since Hiroshima and Nagasaki without the use of a nuclear weapon. But that fact should not give us a false sense of confidence that we'll make it the next 62 years or, for that matter, even the next 20 years.

Mr. Chairman, you asked me to try to help frame the broad picture here, and I'll spend most of my time looking at the broad picture and then certainly be responsive to any questions you have.

I think it's important to have a perspective about what we're doing and what we're not doing, and the challenges, as well as the threats. We have important efforts under way and we've had some successes, including, as General Cartwright just mentioned, the Cooperative Threat Reduction Program; the Global Threat Reduction Initiative, GTRI;

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the G-8 Global Partnership, which I would give a score of eight or nine on words and a score of about three on deeds, but nevertheless, the words are there; the Global Initiative to Combat Nuclear Terrorism; the Proliferation Security Initiative; the rollback of Libya's nuclear program; and U.N. Resolution 1540.

Now, all of those are very important, but from my perspective, the risk of a nuclear weapon being used in the world today is growing, not receding. Let me tell you why: Countries like North Korea and Iran, as we all know, are pushing international will to the very brink by developing nuclear weapons technology and, in the case of North Korea, nuclear weapons. A number of additional countries now are considering developing the capacity to enrich uranium; there are at least seven or eight of them, and there are probably more than that. And if they start that process to do -- to enrich uranium -- and the reason is ostensibly, in all cases, to use fuel for nuclear energy -- a legitimate reason. But it also gives them capacity to move quickly to a nuclear weapons program if they choose to do so.

Stockpiles of loosely guarded nuclear materials are scattered around the world, offering inviting targets for theft or sale. We are working on this -- the Nunn-Lugar program, Cooperative Threat Reduction Program -- but I believe the threat is outrunning our response. We're not moving fast enough. And when I say "we," I don't mean just the United States; I mean the world, because this is not just a U.S. responsibility.

Because of an explosion of knowledge and information throughout the world, the know-how and expertise to build nuclear weapons is far wider and far more disseminated than ever before. Terrorists are seeking nuclear weapons for the same reason terrorists seized airplanes on 9/11: to use them to inflict on the world the greatest possible human suffering, economic loss, and geopolitical chaos.

The good news is that the potential for conflict between the major powers, and in particular the United States and Russia, has dramatically declined. Though both countries seem reluctant to act on it, which continues to puzzle me, we share many security concerns with Russia.

The bad news is that there still remains a potentially deadly nuclear threat. Both of our countries still deploy thousands of nuclear warheads on ballistic missiles that can hit their targets in less than 30 minutes -- a short-warning, hair-trigger, prompt-launch capability that increases the risk of an accidental, mistaken, or unauthorized nuclear missile launch. And this is particularly true because the Russian warning systems have deteriorated so substantially since the Cold War.

Mindful of these rising threats and the eroding confidence in deterrence, as we have historically known it, George Shultz, Bill Perry, Henry Kissinger, and I published an article in January in The Wall Street Journal. We believe that we have arrived at a dangerous tipping point in the nuclear era, and we advocate a strategy for improving American and global security. Both nuclear have and have-not states must think anew if we are to prevent a nuclear nightmare. Whether the world recognizes it or not, we are in a race between cooperation and catastrophe.

Those of us who wrote and endorsed The Wall Street Journal piece -- and there were a number of very senior officials, former government officials, who joined in endorsing that piece -- we believe that in order to deal effectively with this new and dangerous era, the United States and the international community must embrace the vision of a world free of nuclear weapons and pursue crucial measures toward achieving that goal. We believe that without the bold vision, the actions will not be perceived as either fair or urgent. Without the actions, the visions -- vision will not be perceived as realistic or even costly.

Mr. Chairman, Congressman Hobson and members of the committee, we recommend the following specific steps:

Number one: We must secure nuclear weapons and material around the world to the highest possible standards. General Cartwright referred to that a moment ago.

Number two: We should eliminate short-range tactical nuclear weapons -- the bombs most likely to be targeted for theft or purchased by terrorists. In my personal view, we should start with transparency and accountability of these type weapons between the United States and Russia.

Number three: Nuclear weapons should be reduced substantially in all states that possess them.

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Number four: We must get control of the uranium enrichment process for civil nuclear fuel production, halt the production of fissile material for weapons, and phase out the use of highly-enriched uranium in civil commerce.

Last September in Vienna, on behalf of our organization, the Nuclear Threat Initiative, with the support of Warren Buffett -- all important support, I might add, and financial backing -- I advanced a proposal for establishing an international fuel bank. Representative Lantos and others are advancing legislation to support the establishment of such a fuel bank, which I hope members of this committee will take a look at and hopefully encourage and support.

Number five: We must redouble efforts to resolve regional confrontations and conflicts. This, of course, is not an easy task; it's very difficult. But it is an essential one if we are to stem the incentives for acquiring nuclear weapons in places like the Middle East, Southwest Asia, and the Korean Peninsula. These are not simply regional conflicts; they create tensions and confrontations that shape world security and, I might add, also world insecurity.

Number six: We should work to bring the comprehensive test ban treaty into force in the United States and in other key states. I believe that we should use the report by former chairman of the Joint Chiefs, John Shalikashvili, and the safeguards that he recommends as a roadmap to ratification here at home.

Number seven: The United States and Russia should move to change the Cold War posture of deployed nuclear weapons to greatly increase warning time in both countries and ease our fingers away from the nuclear trigger. And I might add, again, here that warning systems are all-important in that regard.

Mr. Chairman, Congressman Hobson, members of the committee, each day we should ask ourselves, "Is it in the United States' national security interest for the president of Russia to have only a few minutes to decide whether to fire his nuclear weapons or lose them in response to what could be a false warning." That is a profound question that we don't spend nearly enough time thinking about. I would hope that this question would be asked in reverse in Russia, and that we would finally begin to ask it together.

Number eight, finally, in terms of the steps we advocate: I believe that we must enhance our verification capabilities, policies and agreements, once again restoring and elevating President Reagan's maxim of "trust, but verify" as an essential component of our national security policy. In my view, we should put at least as much effort into verification -- not talking about money now; I'm talking about effort -- as we do in missile defense. This includes technology and intelligence, but also policy, agreements and transparency, as well as onsite inspection. All of those are enormously important if we are going to be able to meet the challenges of the world ahead.

You've asked me to specifically comment on the Reliable Replacement Warhead, or RRW. First, I want to make it absolutely clear that I support the science-based Stockpile Stewardship Program and the infrastructure required to maintain the safety, security and reliability of our nuclear weapons for as long as we have them.

On the RRW itself, if Congress gives a green light to this program in our current world environment -- and I stress in our current world environment -- I believe that this will be misunderstood by our allies; exploited by our adversaries; complicate our work to prevent the spread and use of nuclear weapons, including the steps I outlined this morning; and make resolution of the Iran and North Korea challenges all the more difficult. Also, I think it will make it more difficult

Also, I think it will make it more difficult to discourage the many new countries that are right on the tipping point of beginning their enrichment process. I think it will make it harder to discourage them from taking that course and harder to set up an international fuel bank as a guaranteed access to nuclear materials so that we can discourage the proliferation of enrichment capability.

I'll leave it to others who have full access to classified material -- and I've had no access to any of that, in terms of the RRW -- to discuss whether there is an urgent and imperative case for an RRW program at this time. And I'm sure there are good reasons -- I know General Cartwright has them -- but I can only say that I have not seen that urgent case. I can see, however, that we will pay a very high price in terms of our overall national security if Congress goes forward with this program.

Mr. Chairman, I believe that we need a strategic reassessment of the roles and purposes of nuclear weapons in the 21st century and an urgent change in both direction and in the steps we take. So I think we need to change the vision and the steps and make it clear, both in this country and the world, that we are making those changes.

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This change in direction should precede a congressional decision on RRW, so I would not fund additional work on the RRW at this time; certainly not development and going forward with deployment. This new direction will require presidential leadership and a consensus judgment in the Congress to sustain it.

Mr. Chairman, Congressman Hobson, and Vice Chairman Edwards, I think this subcommittee has really played a tremendous role in beginning that debate, but as you all know, that debate is just beginning.

In closing, I believe that the vision and actions must go together. We cannot defend America without taking these actions; we cannot take these actions without cooperation from other nations. We cannot get the cooperation of other nations without embracing the vision of a world free of nuclear weapons, which every president since Richard Nixon has reaffirmed through our nation's commitment to Article VI of the Non-Proliferation Treaty.

This is not new; it cannot happen over night. It'll be a long process done in stages. The United States must retain our nuclear weapons as long as other nations do -- any other nations do. But we will be safer, and the world will be safer, if we are working toward the goal of de-emphasizing nuclear weapons and ultimately ridding our world of them.

Nearly 20 years ago, Ronald Reagan was asked to identify the most pressing need in international relations. In response, President Reagan asked his audience to imagine, in his words, quote, "All of us discovered that we were threatened by a power from outer space -- from another planet," end quote. The president then asked, quote again, "Wouldn't we come together to fight that particular threat?" After letting that image sink in for a moment, President Reagan came to his point, again quote, "We now have a weapon that can destroy the world. Why don't we recognize that threat more clearly, and then come together with one aim in mind: how safely, sanely and quickly can we rid the world of this threat to our civilization and our very existence," end quote.

Mr. Chairman, Congressman Hobson, members of the committee, if we want a safer world for our children and grandchildren, our generation must begin to answer President Reagan's question.

Thank you.

REP. VISCLOSKY: Senator, thank you.

Dr. Perry?

MR. PERRY: Thank you, Mr. Chairman. I would like to submit my written testimony for the record, and if you permit that, I'll give you just highlights from that testimony.

At the peak of the Cold War, Andre Sakharov wrote a letter to his Stanford colleague, Sid Drell, in which he said, "Reducing the risk of annihilating humanity in a nuclear war must carry an absolute priority over all other considerations." And so it did. Indeed, through good management -- and I must say good luck -- we did avoid a nuclear holocaust during the Cold War.

Today, the primary threat is nuclear terrorism, and the tools we used during the Cold War are not appropriate in this. In particular, deterrents would not be effective against a nuclear terror group, and defense would not be effective. No matter how well designed our defense would be, the terrorist would not use a missile to deliver the nuclear bomb; he would deliver it with a truck or with a freighter. The good news here, however, is that a terrorist cannot build a nuclear bomb from scratch. So the key to success in preventing nuclear terrorism is to keep them from getting the bomb or the fissile material in the first place.

The Proliferation Security Initiative was established a few years ago as a cooperative international program to interdict nuclear weapons being illegally transferred. This is a useful program, which I support, but we should never -- we should never believe it is likely to be successful in preventing a nuclear bomb from -- a nuclear power from smuggling a bomb to a terror group.

A so-called "tactical bomb" could be put in a suitcase. The plutonium needed to make a bomb as destructive as the Hiroshima bomb is about the size of a grapefruit. There is no interdiction system that exists or in fact that is conceivable that would have a good probability of stopping a clever smuggler from transferring either of those.

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Our government's near-term strategy should be focused on programs designed to accomplish two objectives: first, reducing and protecting existing nuclear arsenals, and secondly, taking all feasible actions to keep new arsenals from being created. Both of these objectives require concerted effort. I'm going to talk first of all about reducing and protecting existing nuclear arsenals.

During the period that I was secretary of Defense, I made that my top priority, using a program that had been inspired by two visionary senators: Senator Nunn -- with us today -- and Senator Lugar.

Our greatest success with the Nunn-Lugar program was in getting Ukraine, Kazakhstan, and Belarus to give up all of their nuclear weapons. At the time we started this program, Ukraine was the third largest nuclear power in the world. They had more nuclear weapons than England, France, and China combined. Today, they have zero nuclear weapons. At the same time, we took actions, in cooperation with the Russian government, to substantially improve the safeguards on nuclear weapons, material and technology.

The Bush administration has continued the Nunn-Lugar program, but in my judgment, has not made it a priority. It should be our top priority to strengthen the Nunn-Lugar program and extend it to include all nuclear powers, and to deal with fissile materials associated with commercial power reactors.

The second challenge is to keep new nuclear arsenals from being created. During the last six years, both North Korea and Iran have substantially advanced their nuclear weapon program, even though the administration has stated that they considered such programs unacceptable.

Beyond North Korea and Iran, there are several dozen countries who have the capability to build nuclear weapons in a year or two. These nations have voluntarily joined the Nuclear Non-Proliferation Treaty and renounced the building of nuclear weapons.

But this nonproliferation regime is exceedingly fragile. It is threatened today by the emergence of new nuclear powers -- India and Pakistan -- and would be entirely undermined if North Korea and Iran proceed unchecked to build their nuclear arsenals. But it could also be undermined by the policies of the two major nuclear powers -- United States and Russia.

Russia has declared that because of the weakness of its conventional military forces, and because of the American deployment of a national missile defense system, that it must depend more on their nuclear weapons. They have renounced their previously stated no-first-use policy. They have remerged their old ICBMs, they have undertaken the development of new ICBMs, and they have maintained a large stock of tactical nuclear weapons.

The Bush administration, for its part, has requested congressional authority to build new nuclear weapons, most notably the so-called "Bunker Buster"; has not ratified the comprehensive test ban treaty, while still complying with it; and has requested the authority to build a Reliable Replacement Warhead.

The actions of the United States and Russia have weakened the Nuclear Non-Proliferation Treaty, which was already undermined by the nuclear programs of India and Pakistan, and was being further undermined by the emerging programs of North Korea and Iran. Any attempt to prevent a hemorrhaging of proliferation requires all of the nuclear powers to act in concert, and in particular, requires Russia and the United States to show leadership in complying with the requirement of the NPT for the nuclear powers to move towards nuclear disarmament.

The op-ed piece that Senator Nunn described was written in that period, and in that regard, I want to associate myself entirely with the testimony of Senator Nunn.

One specific question faced by this committee is whether to authorize the Reliable Replacement Warhead program. There are two valid arguments for proceeding with the RRW program: that it will maintain the capability of our nuclear weapons designers, which will become important if we ever need to design more nuclear warheads, and it allows the design of a warhead that cannot be detonated by a terror group, even if they were able to get their hands on it.

Our countervailing argument is that if the United States proceeds to develop new nuclear warheads, it will substantially undermine our ability to lead the international community in the fight against proliferation, which we are already in danger of losing.

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My best subjective judgment is that the proliferation argument outweighs the other two, but I understand that we live in a very dangerous and uncertain world, and I firmly believe that we have to maintain an unequivocal deterrent for the foreseeable future. So my judgment would be different if I thought that our present nuclear force could not be reliably maintained to provide that capability for many decades in the future, which may very well be needed.

The best evidence I have seen on this issue is that our present nuclear weapons will retain their capability for 50 to 100 years, particularly if we continue to downsize the arsenal. So on balance, I believe that we could defer action for many years on the RRW program, and I have no doubt that this would put us in the stronger position to lead the international community in the continuing battle against nuclear proliferation, which threatens us all. And I believe that our best protection against nuclear terrorism are robust programs to keep nuclear weapons and fissile materials out of the hands of terrorists.

Thank you.

REP. VISCLOSKEY: Thank you very much.

Dr. Garwin?

MR. GARWIN: Thank you for the opportunity to be here. And my whole testimony, which supports the statements I will make, should be in the record.

So I'm going to talk about how valuable is the RRW program, and these values are not only positive, but negative, so you have a judgment to make. I hope to give you some of the elements of that judgment.

I address the RRW question in five categories: confidence, cost, safety and security, the health of the laboratory design effort, and the requirement that the RRW be capable of being deployed without nuclear testing.

First, as for confidence, I don't agree with the generally stated assumption that confidence in the reliability of our existing nuclear weapons will inevitably decline with time as the weapons age. It's usually stated that the accumulation of minor modifications will move the weapons farther from their nuclear test pedigree and thus, inevitably, reduce confidence in their performance.

On the contrary, the science-based Stockpile Stewardship Program -- and in particular the advanced scientific computing capabilities that have been procured at great cost over the last 15 years of the Stockpile Stewardship Program, have paid off handsomely -- as indicated in confidence in increased pit longevity. Thus, in the passage -- in the case of the essential and sensitive thermonuclear weapon primaries, the passage of time has brought greater, not lesser, confidence in pit longevity.

I remind you of the November 2006 announcement by NNSA that the weapon laboratories had updated their 45-plus-year pit longevity to 85-plus years. Of course, that is not the entire nuclear weapon. There's also the nuclear secondary and the vast number of non-nuclear components that fail, as components always do, but they are not involved in nuclear explosion testing and they can be tested thoroughly and replaced without compromise of reliability.

In fact, the stockpile weapons, as gradually modified, are closer to the test pedigree than is either of the RRW designs to a nuclear test explosion. And with the passage of time and the improvement in computing tools, I believe that confidence in the reliability of the existing legacy weapons will increase, rather than diminish, just as has been the case with the nuclear weapon pits.

It follows that the proposed reductions in stockpile numbers, that are supposed to be enabled by the deployment of the RRW, could more confidently be obtained with the legacy weapons. And such reductions need not wait for the advent and the entry into the stockpile of large numbers of RRW warheads, which would not happen, I estimate, before about the year 2020.

In fact, even the RRW itself would not allow reductions, in the minds of some people. Dr. John Foster, former director of Livermore, has expressed his discomfort with reliance on any single RRW design in view of the incidents of birth defects or design failures with which we have had experience in the past. And I reference his full quote.

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Now, as for cost, it's claimed that the RRW program will allow a major reduction in cost of the nuclear weapons infrastructure, in view of the elimination of environmentally problematic materials, of which the most prominent is beryllium, not present in either of the RRW designs. But the RRW will not replace the legacy weapons until some years after the first production unit, and the legacy weapons will need to be dismantled for years after that, so beryllium will still be involved for a long time.

Ultimately, when the legacy weapons, on the one hand, would need to be remanufactured, or the RRW, on the other hand, if we displace the legacy weapons eventually, simplified manufacturing and assembly procedures of the RRW would almost certainly provide a cost savings. But that's a long way in the future.

The Office of Management and Budget has long provided a mechanism for evaluation of a particular program, by means of the discounted present value of the streams of costs and benefits, and that's what NNSA needs to use in making its decision. And the Congress needs to review such a detailed assessment in arriving at its own responsible judgment.

Now for safety and surety, we have had weapon accidents in the past. We've never had an accidental nuclear detonation but, for instance, in 1962, there was -- there were four hydrogen bombs accidentally dropped off the coast of Spain, and two of them -- the conventional high-explosive exploded and scattered plutonium. So there had to be a massive clean up at the cost of some tens of millions of dollars.

U.S. nuclear weapons are much safer since that time. Since we no longer practice airborne alert, there are a lot fewer nuclear weapons, and handling procedures have been improved.

Since there's no possibility of nuclear explosion with existing weapons, according to the stringent design criteria, safety concerns and costs of accidents can be folded into the stream of costs and benefits. So I say they're not a make-or-break proposition, and they won't show up very high in the cost calculation.

But surety -- security is another matter. This is the resistance of a nuclear weapon to being fired with full or very substantial nuclear yield without proper authorization. Bombs and other tactical weapons in the U.S. stockpile have long had Permissive Action Links, and every U.S. nuclear weapon must require its explosive system to be initiated at two or more points, or else it wouldn't be one-point safe, which they all are.

So the concern is that a nuclear weapon might be stolen or otherwise obtained by terrorists or some other group, and over the course of hours, days or months, might be disassembled in an effort to defeat the Permissive Action Link or other surety mechanisms.

Whether a terrorist acquires a couple of legacy weapons, such as the W76 or the RRW, the weapon could ultimately be disassembled and the plutonium metal recast to make the plutonium sphere for a first-generation bomb. So it is not totally inert; it is not harmless. It is likely that they could not detonate that weapon, but they could mine it. But it may be a more difficult target than the hundreds of tons of highly-enriched uranium, and military and civil plutonium that could also be the target of terrorist activities.

But just as Livermore has indicated that it may incorporate into the RRW program some of the features of the Los Alamos design, some of the lessons of surety learned from the RRW design effort could be used to further improve surety for existing weapons, by their incorporation in the transport container, for example. Whether RRW goes forward or not, such technical transfusion might significantly increase the surety of existing weapons, and at an early date.

We won't be able to do without guns and guards for a long time. Reducing the number of nuclear weapons is a good way to reduce the number of guns and guards, but also technical advances in the cases and environment of the nuclear weapons, not necessarily in the nuclear weapons, can be a big help.

Now for the health of the laboratory design effort, the RRW competition has been a source of intense stimulation and excitement for the laboratories. It has revitalized the design community and, by its nature, opened and strengthened communication between the nuclear weapon designers and the engineering and production complex, to the great benefit of the U.S. Nuclear Weapon Complex.

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However, this benefit would not be much further strengthened by continuing production of the RRW, nor would this one-time benefit be adequate if there were no further RRW designs. In 10 years, we'd be just in the same place, not having designed a nuclear weapon for a long time, and there would be a call for a new nuclear weapon. There's already a call for a second RRW for the land-based ballistic missiles.

Now the question of nuclear testing: The technical question as to whether the weapon can, with confidence, be placed into the stockpile after development, but without nuclear explosion testing, deserves more study. And I must say that the JASON Group, to which I belong, is under contract to study this for NNSA, with the bulk of the work to be completed this summer.

These are my personal comments, and I make two of them right now.

The first is a narrow comment reflecting the prominence given to the requirement not to test -- that the primary reason for selecting the Livermore design over the Los Alamos design was that it was closer to the test experience. Well, one can have more confidence, and even much more confidence, in A than in B, but that is still not absolute confidence. And I say again that the legacy weapons are closer to their test pedigree.

A more general comment is that beyond the technical judgment of engineers and scientists is the question whether at some future time, after the weapon enters into service, there may be political questioning by some president or presidential hopeful, or even by some future STRATCOM commander, about the wisdom of having a growing stockpile of untested nuclear weapons. It seems likely that such high-level concerns would lead to a nuclear explosion test despite the U.S. being a signatory to the comprehensive test ban treaty without having yet ratified the treaty.

But even if the stockpile RRW passed its nuclear explosion test with flying colors, the United States would have incurred the political, proliferation and security costs of having its rivals, and perhaps other countries, conduct nuclear explosion tests that will very substantially advance the state of the nuclear weapons art in their countries.

The French weapons establishment, the CEA, in its annual report in the early 1990s, stated with pride that they had been able to accept a new warhead for the submarine fleet into the inventory without nuclear testing. However, with the change of administration from Francois Mitterrand to Jacques Chirac, France decided to conduct a quick series of eight nuclear explosion tests at their site in the Pacific. The series was terminated after six tests, and I commented on international radio and television that that test series was not a bad thing if it could lead France to sign the CTBT. And indeed France and the United States vied to be the first signatories to that treaty. In a CTBT era, however, a nuclear explosion by the United States would have major adverse security consequences.

So as for confidence, I believe that we have at least as much confidence in the life-extension programs of the legacy weapons as we would have in the RRW. And we have proof of that, in regard to the pits, with another 40 years to validate pit production facility at Los Alamos, as well as pit production elsewhere.

The cost of the RRW program is unknown and must be broken down into work packages and evaluated on the discounted present-value approach. RRW can incorporate advances in surety. Legacy weapons are safe enough, especially in view of reduced numbers and lack of weapons alert. Surety improvements in the RRW are sound, but not absolute, and some of them can be incorporated into the weapons environment of the existing weapons.

The laboratory design effort has been reinvigorated, but that is already accomplished. And the question of nuclear testing is all- important. U.S. national security would almost surely be impaired if, after RRW was deployed, it had to be tested.

Thank you for the opportunity to talk with you.

REP. VISCLOSKY: Mr. Garwin, thank you very much.

And I will thank all of the panel. I thought your testimony was just enlightening, which does, as you know, not always happen.

Couple of just comments I would make, and then I would have one question to begin with, is that Senator Nunn, you talked about the committee's involvement in this issue and congratulated on us.

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I was remiss by not referencing my good friend and partner, and that is Dave Hobson. Because I do think the reason we're all in this room today is there was a House report by this committee in 2005 that asked the administration to look at the complex. And the administration looked at the complex, so you had the Overskei report that came of it. And essentially now we are having a very serious conversation about the RRW -- this afternoon as well as this morning -- serious discussion about the characteristics, size, and need of the nuclear complex. I don't think that would have happened but for the leadership and foresight of Mr. Hobson, and would note that.

Dr. Perry, you had also referenced the Bunker Buster. I was going to try to control myself, but would also note that, again, one of the joys, as a member of Congress, is having had the good luck to be here with Mr. Hobson, who chaired this committee for four years. And he has taught me well in that. If he believed the president of the United States -- in this case President Bush -- was correct on an issue, he would go all the way down that road with the president of the United States. And if he thought that he had a disagreement, he would go all the way down the road on that -- in this case the Bunker Buster.

And I'd like to think, and I do believe, that that is the attitude of everybody on this subcommittee, too, and we're just trying to find the right thing.

So Dave, I just wanted to mention that.

Several of you also talked about nonproliferation, and just for the record at the beginning, would point out that in the administration's request for 2008, while there is an increase request for weapons activity of \$235.7 million, there is in fact a decrease in the request on the nonproliferation accounts of \$10.7 million.

The last point I would make -- and the Stockpile Stewardship Program was referenced by several of the witnesses and we'll have more detailed conversations about that in the afternoon -- is one of the concerns I do have is Congress was told that we needed a number of facilities built to facilitate the option of not testing, but to make sure that we did have safety and reliability. But the National Ignition Facility, Microsystems and Engineering Science Applications building, and the Dual-Axis Radiograph Hydrotest Facility still are not yet completed, and now we have a new request before the committee to change course somewhat.

But having said that, General, if I could start. The American Association for the Advancement of Science panel on the Reliable Replacement Warhead released an interim report in February of this year and recommended any decision to proceed with the RRW must be coupled with a transparent administration policy on nuclear weapons, including comments concerning stockpile size, nuclear testing and nonproliferation.

The Defense Science Board's study on nuclear capabilities and the Defense Threat Reduction Agency's sponsored report on foreign perspectives, released about a year ago this time, pointed out that there has been virtually no high-level long-term articulation of U.S. nuclear weapons policy.

The DOD and DOE are aggressively implementing the RRW initiative in planning for a long-term nuclear weapons complex modernization effort, although the administration has not announced any effort to begin a policy process to reassess our nuclear weapons policy and the future nuclear stockpile required to support that policy. I do believe this is the cart before the horse, and you had even mentioned that the Moscow Treaty refers to deployed weapons and that we, as a country, need to look more broadly.

The fundamental concern I have here is until we have a determination recognizing that the objective potentially evolves on a daily basis, where we should be at a point in time, as far as nuclear weapons, and then decide exactly how we should get there.

GEN. CARTWRIGHT: A little bit of an awkward position in talking about policy, but we have as a department conducted both the collecting of defense -- (off mike). Both of those have put us on --

REP. VISCLOSKY: Microphone, please.

GEN. CARTWRIGHT: Am I not close enough?

Both of those put us on a path, as I stated in the opening remarks, towards the lowest number of nuclear weapons necessary for national security. Both of them -- both of those reviews put us on a path to start to better integrate the

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other offensive and defensive capabilities available to the department, both in established programs of record and in those that are proposed in the future, to allow us to get the lowest number of nuclear weapons necessary for national security. I broadened that out in my comments, and certainly in my interpretation as a commander, to be more inclusive than just those that are operationally deployed.

Having said that, trying to find, one, credible deterrent capabilities across this broad spectrum of threat that are alternatives to just a nuclear deterrent is a lot of the work that STRATCOM has endeavored in filling out what is called the "New Triad" -- (inaudible) -- the capabilities in missile defense, our mission area in combating weapons of mass destruction -- which is the nonproliferation and counter-proliferation consequence management missions -- has given us credible alternatives across this broader spectrum where, in particular, nuclear weapons are not appropriate.

We still have some capabilities that we need to field or find capabilities against -- as you articulated, the individual terrorist who is not likely to use an ICBM as a delivery vehicle -- against having alternative capabilities, where we had heretofore only relied on nuclear weapons, and yet have a threat, particularly in the sophisticated adversaries, but also in the relatively unsophisticated adversaries.

So in both cases, I think we're on a path to start to draw down these weapons. We have endeavored over the past two to three years to get this debate to be a little richer than it has been and more broadly discussed. That has actually been quite advantageous in moving us forward in finding credible alternatives to a nuclear-only strategy.

Does that work need to continue? Is it done? It is not done and it does need to continue. We have tried in the policy -- in our participation, from STRATCOM perspective -- in the policy debate to ensure that it is broader than just nuclear, and oftentimes we had stovepiped nuclear discussions to be nuclear-only discussions and not considered the other pieces of the puzzle -- things like the Proliferation Security Initiative and the cooperative threat reduction activities have to be a part of this debate, as do conventional capabilities, as we deploy them into our forces across the spectrum of threats.

So to me, broadening this debate out, understanding the breadth of the threat that we're trying to address, alternatives to nuclear weapons that can be plausibly put in place, allowing us to draw down that nuclear weapon stockpile to the smallest number necessary for national security is the policy that I am charged with trying to, one, create capability for and two, create credibility in that capability.

REP. VISCLOSKY: And you're pursuing that policy, but the question really is, is there a clearly articulated administration decision in determination as to if, in that configuration between conventional and nuclear, what the stockpile should use, as far as what it should be per its characteristics, how many systems are contained in it, as well as how many warheads and what the status of those warheads. Is there a clearly articulated administration policy on that point?

GEN. CARTWRIGHT: Let me put it in this context: One is to understand the ambiguity of the world that we're trying to move towards. So what you want is the ability to balance and to be able to adjust the balance when things change, because they will. There are unanticipated activities. What we want to be able to do is, to the maximum extent practicable, have a credible capability in non-nuclear --

REP. VISCLOSKY: And I appreciate that. What about the nuclear?

GEN. CARTWRIGHT: Well, to allow us to draw that nuclear down to the minimum number possible, both in the delivery vehicle side of the equation and in the warhead side.

REP. VISCLOSKY: But the administration is not there yet?

GEN. CARTWRIGHT: No.

REP. VISCLOSKY: Okay.

GEN. CARTWRIGHT: I mean, this is a work in progress.

REP. VISCLOSKY: And I understand that. And the point I would make, until (that determined ?) with a range, understanding the world, as you say, evolves every day and changes. And I deeply appreciate the idea that, to the

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extent, we can deter possible nuclear threats conventionally, but until there is that determination with an array on composition, number of systems, and number of warheads and their status, start down a new road.

GEN. CARTWRIGHT: I mean, I would tell you that there is a range associated with what we have called the Moscow Treaty. And that has been the target that has been set for the 2012 time frame. I would like to be able to have the opportunity to challenge that range --

REP. VISCLOSKY: Right.

GEN. CARTWRIGHT: -- based on new capability, not new nuclear capability.

REP. VISCLOSKY: And I absolutely believe you and believe your sincerity, but -- (inaudible) -- also dealt with the deployed.

GEN. CARTWRIGHT: That's correct.

REP. VISCLOSKY: And again, the stockpile is a much broader picture than that.

Thank you.

REP. HOBSON: I want to make a couple of comments before we go. First of all, I signed the Lantos Bill, so it now has bipartisan support, and I hope we can get it done.

I want to make another comment very quickly. We've done one pit at Los Alamos recently in the old way. It cost over \$2 billion -- W88 (is the ?) ready to be shipped, but it's taken a while. How many years?

But one thing -- and I don't know that I have time to ask this right now, but it goes along with this question, and it goes along with transparency. And I'm going to ask the question, then I think we've got to go vote -- members here to do that. And I'm going to read this, and then you can answer it when I come back or you can go on to something else.

But I want you to -- the Moscow Treaty only deals with deployed strategic nuclear weapons. The United States can comply with the letter of this treaty by reducing the number of deployed strategic weapons and designate everything else inactive reserve. And that is precisely the paper shuffle that the administration is doing. However, I don't believe the administration should play such games with Congress, the American public, the Russians, or the rest of the world.

General Cartwright, it seems like the first step for an honest dialogue on nuclear weapons is to declassify -- and I've been trying to get the total number of nuclear weapons in our stockpile -- active, inactive, reserve, deterrent, waiting dismantlement, everything else, every other conceivable thing that people move around and label. I've been pushing this for years, and the administration has resisted declassifying these numbers, and I don't know why. That's my first question.

I suspect our potential adversaries know the number of U.S. nuclear warheads with much better precision than do the members of Congress. I think I know the number, but I can't talk about it.

Since the number of submarines, ICBMs, and bombers is known with such a high degree of accuracy and the number of operationally deployed warheads doesn't seem to be secret, why is the total stockpile number more sensitive?

Dr. Perry, Senator Nunn, Dr. Garwin, do you see any great security risk in the U.S. declassifying these numbers on the total size of our nuclear arsenal? And I'm -- that's really what I want you to talk about because you kind of alluded to, kind of, this transparency thing.

I've been poking at this for about three years, and nobody will -- and I'd like to have your perspective when we come back. We have to vote, but there's going to be two members here and they can go on.

REP. : (Off mike.)

REP. HOBSON: Okay.

Well, do you all want to respond to that?

I'll start with you, General Cartwright. Why don't we do it?

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GEN. CARTWRIGHT: I don't have a good response for you. I -- we have -- we both have struggled with just being able to articulate the limits of the Moscow Treaty, and while it's in open press, I can't say it.

REP. HOBSON: I know. That's what's troublesome.

GEN. CARTWRIGHT: I understand that.

REP. HOBSON: All right, Senator Nunn.

MR. NUNN: Mr. Chairman, I think you're right. I would keep pushing for that. I would add another wrinkle to it - I think an important one -- that is I would like to see us have bilateral transparency with Russia on the numbers of warheads. And I particularly would think that we could start with the battlefield warheads because I worry about the security of those, not as much as I worry about the security of materials, because they're more vulnerable, but these warheads are very transportable.

We don't know how many warheads that Russia has, last time I had a briefing, and what I hope is that they do, because if you don't have a baseline inventory, you don't know when one's missing.

We need to do the same thing on nuclear materials, and we need to do it on weapon-grade nuclear materials all over the world, and we need a database with all of that that's available. Perhaps it won't all be public, but it would certainly be available to the major nuclear powers and to the IAEA. And we need to begin to be able to match any type of explosion that may occur, God forbid, with the forensics of the kind of nuclear materials that are in each country and each stockpile.

So it's a big, broad question. I think you're on the right trail and I would encourage you to continue.

REP. HOBSON: And the consolidation of certain types of material in this country into certain sites would be a lot more secure than having them spread out all over the country like we do now. Wouldn't you agree with that?

MR. NUNN: I agree with that, and that's what we've spent a lot of money in trying to help the Russians -- encourage the Russians to do in Russia, but this applies here, too.

REP. HOBSON: But we're not doing it very well here.

MR. NUNN: It applies here, too.

REP. HOBSON: Anybody else want to comment on that?

MR. PERRY: I concur with Senator Nunn.

MR. GARWIN: I think that the total number of nuclear weapons should be declassified. And we have some very specific proposals in a National Academy report of a few years ago on monitoring nuclear arms control agreements for exchanging encrypted or otherwise hashed detailed locations, even of individual nuclear weapons, to support further arms control agreements, even though that information would not be available to anyone unless there were a further agreement.

REP. HOBSON: All right, let me ask one quick thing. I can understand the importance of reducing the number of active deployed (seeking new ?) weapons, but from a congressional perspective, it may be more important to talk about the total numbers of our nuclear warheads.

Without getting into classified details, would any of you witnesses share their thoughts on what the final size of our nuclear stockpile should be in the future?

MR. GARWIN: I think that if the U.S. and Russia marched in lockstep to lower numbers, we could have a total number of nuclear weapons, deployed and nondeployed, of 1,000 -- not just strategic weapons, all kinds of nuclear weapons, because all these weapons are strategic if delivered by the short-range missile, for instance, against U.S. coastal cities. And that's a bigger threat than people imagine.

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In the 1998 commission on the ballistic missile threat to the United States, we judged that all of these countries that might have a long-range missile could right now have a short-range missile that could fire from a ship or an airplane -- especially a ship off U.S. shores -- and could carry more accurately a bigger payload -- a payload of mass destruction.

MR. NUNN: Just -- Congressman, I believe it's more than just numbers; I think it's a question of survivability. You don't want everything in one pile and make them more vulnerable, either in Russia or here, and I think it's a matter of warning time. Where they're deployed --

I again repeat, I think we need to think about how much warning time we want the Russians to have, because we don't want them to make a mistake.

And we have an existential stake in the Russian warning systems working properly. We don't think about that, but we do,. And they have one in ours.

So I would look at warning time and I would look at survivability. And I would get outstanding leaders like General Cartwright to sit down with his Russian counterparts and go through this with a -- an authority from the president of the United States, and hopefully from President Putin to his counterpart, to begin talking about these things.

We've had -- we still have a window open with Russia. It's not as wide open as it was; it's still a window.

Even in the Munich speech that President Putin made, where he was criticizing NATO and the U.S., there were all sorts of things that weren't covered by the media in there about cooperation on space, cooperation on the terrorist movement, cooperation on a lot of things in nonproliferation, and we just ignore all that. And we've also dropped any effort to talk to the Russians about all these verifications, which are beginning to expire as arms control agreements expire.

So there's a whole agenda out there that we need to talk about. But driving numbers down is one part of the equation, but I think it has to be in the context of warning time and survivability.

MR. GARWIN: I agree with Senator Nunn's statement on that.

MR. PERRY: And specifically, when they get together, these military leaders ought to discuss how they would implement various limits -- a limit at 1,000, a limit at 2,000 total warheads, 5,000, or maybe other dimensions. They have very good staff on both sides and they would have lot of fun doing this and it's important for our national security.

REP. HOBSON: Great. Thank you.

REP. CHET EDWARDS (D-TX): Now Mr. Simpson, as soon as Mr. Hobson and Mr. Visclosky leave, maybe we can save the world by unanimous consent here. (Laughter.) We could do some good things for the country right now and right here.

Let me recognize you for any questions you might have, then I'll proceed.

REP. MICHAEL SIMPSON (R-ID): Well, thanks, Mr. Chairman.

I appreciate this panel being here. It kind of shows a little bit of the disconnect we have here where Chairman Visclosky and Mr. Hobson are on the Armed Services Appropriations Committee, and so consequently, they know an awful lot about this. We sit on the Energy and Water Committee and there's an awful lot of members on this committee that haven't dealt with this to a large degree.

We talked about, last year, the reorganization of the complex and a few things like that, but when we get into what warheads are necessary, whether we need an RRW, and et cetera, I think a lot of us feel kind of lost. And as I listen to this testimony, it's interesting that -- I think everyone would agree, we would like a world without nuclear weapons. That's a goal we ought to go after.

And I listen to the testimony of General Cartwright and it sounds like it's -- you would like that goal, but you live in the world that we -- that currently exists.

And Senator Nunn, you have this ideal world out here that we would all like to achieve, and the question is how do we get from the world that exists to the world that we would like to live in?

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MR. NUNN: Well, for one thing, you keep General Cartwright where he is until we get to my world.

REP. SIMPSON: (Laughs.) But it is a very interesting debate. And one of the disconnects we have, as I said, is between the fact that DOD orders weapons and Department of Energy funds them and builds them and so forth. Should DOD be paying for the weapons that they're ordering?

GEN. CARTWRIGHT: At the end of the day, the United States taxpayer and government do. Whether it would change the behavior to move it from one account to another -- in this case to DOD -- and have them buy each individual weapon, this is, you know, more personal than anything else. But I think the larger problem is the entire stockpile and what could happen if we'd move it to DOD.

One behavior that you could see is that there would be then no effect on the entire stockpile, and the part that DOD had may continue to shrink, just like it is right now, with no effect on the larger stockpile. And to me, the larger issue here is how many nuclear weapons -- not what their character is, but how many nuclear weapons do we want to have in the stockpile. How many are necessary for national security? And so I would -- I would be cautious in moving it around.

From a standpoint of administrative, I don't think that's hard. But what is the behavior that you're desiring to elicit by moving the responsibility of who buys? And if it is to somehow have DOD change --

REP. SIMPSON: Would the Department of Defense's request for what they want be different if it came out of the Department of Defense's budget?

GEN. CARTWRIGHT: I -- no, sir. I don't think so. We -- I mean, I certainly advocate for what I believe I need. If resources are not sufficient to fill that requirement, I still advocate for what I believe I need to do the job that was given to me. But this is a much larger complex, a much larger issue than just those that are operationally deployed. And the ones that are operationally deployed have been coming down significantly, and continue to come down, and we continue to find ways to drive it down.

The question is the rest of this stockpile and how much of it's necessary, and is there, in the manufacturing and the production complex, a way to start to also reduce that side of the equation?

When we dealt -- let me take you back to a ground-type approach to this -- but when we were dealing with the 155 round, which is what we use predominately in our artillery, when we brought precision to that equation, we drastically reduced all of the inventories that were sitting in waiting -- number one. Number two, we drastically reduced the transportation costs because we were able to get rid of the number of weapons, bring down the number of weapons, change the whole infrastructure.

Those are the kinds of activity that we're looking for potentially in RRW, is completely change the equation of how you manage this. If you incentivize just a small part of that activity to reduce, you won't get those -- that kind of leverage oftentimes. There's no surety in any of these, but that would be the concern that I would have is that you would not then have the effect on the entire stockpile; you'd just be looking at a niche and it wouldn't have the ability to change the whole business case.

REP. SIMPSON: Are you worried about, if we went ahead with RRW, about the effect it would have on our ability to convince other nations to reduce the stockpile of nuclear weapons?

GEN. CARTWRIGHT: I think that's a fair conundrum to debate, and other panel members have talked to that. If you accept the premise that as long as others have these weapons, we're going to have to have these weapons to deter, then what we have should be safe, secure, reliable, and we ought to look at the infrastructure associated with it and make it the best that we can, both from a cost standpoint and these other attributes.

REP. SIMPSON: Mr. Garwin, as I understood your testimony -- and I ask just to clarify it in my own mind -- we have as much, and maybe more, reliability in the current legacy stockpile that we have, based on the simulations that we currently have, than creating an RRW that had never been tested. Is that right?

MR. GARWIN: That's my belief. As for, you know, making the best we can -- safe and secure and cost, you can't have all of those; you can only optimize some overall function. And that's what I propose to do, because as I say, even

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security -- surety is not absolute. You don't have absolute surety. So once you don't have absolute, you have to quantify and you have to put it into the overall evaluation.

You have to ask, "Where are the weapons exposed?"

Of course, as Senator Nunn has said, most of the effort should go to improving the surety of Russian nuclear weapons, because there are more of them and more material and much more exposed than our own. So we ought to be doing that at a much higher level. And as for ours, we ought to find out where they are most insecure and plug those leaks long before we have an RRW.

REP. SIMPSON: Senator Nunn, you -- in listening to your -- I mean, I have a tendency to agree with what you said.

What concerns me is in the past, when we've had the policy of mutually assured destruction, we were dealing with Russia and other communist states, and we assumed that they didn't want to be destroyed as much as we didn't want to be destroyed. I'm not sure that's true of all the states we deal with today, particularly Iran and some other states. I mean, we've got rogue nations that are -- they may believe it is in their best interest to actually fire a nuclear weapon.

How do you deal with them in today's world and still try to achieve the goal of a nuclear-free world?

MR. NUNN: Well, I believe they have to -- if you don't succeed in getting those countries to give up their nuclear quest, you're not going to have a nuclear-free world. And I certainly would be the first to say if Iran or North Korea is going to end up with nuclear weapons, I am not for dismantling the United States nuclear arsenal. So it has to go together and it's a sequence of steps. A lot of this is sequence.

The RRW debate is in a very, I think, bad context now because there was recently an SAIC study done for the Department of Defense -- and I have an executive copy of it here -- and very briefly, here's the way they saw the world perceiving the United States now, in terms of our nuclear policy.

Quoting from that -- Page 4 of that summary, the world sees us as increasing emphasis on nuclear weapons. The world sees us as shifting from nuclear weapons for deterrence and as weapons of last resort to nuclear weapons for war-fighting roles and first use. The world sees us as lowering the nuclear threshold intentionally or unintentionally. And the world sees us as blurring the difference between nuclear and conventional weapons -- use whatever fits best.

That's the perception. That's not the reality. I don't think that's where we're heading. I don't think General Cartwright would say that's where we're heading, or people in the Department of Defense, but we have, to say the least, been very inept in explaining where we're going with nuclear.

And that's the reason Shultz and Kissinger and Bill Perry -- who speaks for himself better than I -- have a vision that we believe needs to be restored, which is the vision of the Non-Proliferation Treaty which every American president basically has signed onto, including our President Bush today. And that is a vision of a world without nuclear weapons. But the vision has to be accomplished by steps. Part of the steps get right to your question. We've got to not only keep Iran and North Korea from having an arsenal -- North Korea's going to have to give them up -- but we also are going to have to try to do what we can to keep countries from going into enrichment, which is their legitimate, legal right under the NPT. If we have six or eight more countries go into enrichment, then the Iran-North Korea problem is going to get a lot worse. Some of that would be in response to Iran and North Korea, if we don't stop that.

So it's a sequence, and I think the sequence has to be a restored vision for the United States and for the nuclear powers, not just the U.S. And then I believe we can create an atmosphere of much more cooperation in dealing with the Irans of the world, the North Koreas of the world, and in setting up backup fuel supplies, which will help restrain the proliferation of enrichment.

REP. SIMPSON: You mentioned the international fuel bank that you had proposed. How exactly would that work? Or how do you propose it work?

MR. NUNN: Well, the way we proposed it -- and it's going to be a work in progress because the IAEA is working on this issue. We basically -- I committed, on behalf of our organization -- backed by Warren Buffett -- \$50 million to the International Atomic Energy Agency if they matched it with \$100 million from other sources and if they did that

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within two years to create a last-resort backup insurance reserve. And that reserve would work after -- if there was a commercial cutoff to a country that was not building enrichment or reprocessing. That's the condition: They have to not be engaged in reprocessing or enriching. And if they were eligible and they got cut off for political reasons, if they couldn't get a supply, this backup reserve would come in and help them with a temporary supply until they could reassure their sources.

So the idea here is to encourage nations not to get into enrichment and not to reprocess. And that's -- right now -- I wish we'd been able to do this five years ago because we're right on the tipping point of that happening. If Iran gets nuclear weapons, in my view, within 10 years, there'll be five or six other countries out in that part of the world with nuclear weapons, and then try deterring all of them and deterring each other. And then think through the equation of a submarine pulling up somewhere -- and submarines are proliferating also, diesels which are pretty darn quiet now -- and popping one off -- a nuclear weapon off in one country, and that country doesn't know where it came from. I mean, that's the world where we're heading right now. So I think we've got to understand that's where we're heading and try to get out in front of it. It's late, but it's not too late.

REP. SIMPSON: How surprised were we when North Korea set off their nuclear weapons? That they were that advanced? Intelligencewise, how prepared for that are we? I guess my question really gets down to how good is our intelligence that some other country doesn't -- isn't reprocessing? How -- you know.

MR. PERRY: In this forum, it would be difficult to go into the aegis of the intelligence, but reprocessing has a pretty substantial fingerprint. I mean, this is a very complex activity, and it takes infrastructure and it takes a concerted effort in investment and whatnot -- all issues that can generally be detected. The state at which any given country is at any given moment is more difficult; the intent is even more difficult -- of what they intend to do. So the difference between enriching and developing a weapon, and the steps in between, are very difficult to discern.

REP. SIMPSON: But you feel confident that our intelligence would be able to tell if a country is -- had gone into the process of reprocessing to enrich?

MR. PERRY: I would tell you that it would be more challenging to figure out if a country had used a third party to gain a nuclear weapon, and that would be a more difficult security risk than a country starting from scratch to build a nuclear capability.

REP. SIMPSON: Mr. Garwin?

MR. GARWIN: Reprocessing of nuclear fuel to obtain plutonium is easier to detect than enrichment of uranium to make highly enriched uranium for either the implosion or the gun-type bomb. But as for North Korea, our 1998 Commission to Assess the Ballistic Missile Threat to the United States judged that North Korea already had two nuclear weapons, and they could have tested one at any time. Now, they didn't seem to do a very good job in their test, but that's another question.

REP. SIMPSON: One last question I'd like to ask. And Mr. Perry, you'd probably know this as well as anyone. What is the cost -- a developing country, as it develops, wants to enhance its defense if it feels threatened. What's the cost of maintaining your defense by a nuclear capability versus by conventional armies and so forth? Is it cheaper to have a nuclear defense? And if so, is that an encouragement to developing countries to get into the nuclear arena?

MR. PERRY: If what you want to do is use your military to attack another country, the answer is no. But if what you want to do is deter another country from attacking you, it's cheaper to do it, I think, with a nuclear than with maintaining a large standing army.

REP. SIMPSON: Well, every country says they want to do it to deter being attacked. Nobody will say that they want to build their defenses so they can attack another country.

MR. PERRY: Exactly.

REP. SIMPSON: So I mean, it would seem to me that it gives them an incentive to want to do it more cheaply by nuclear weapons.

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MR. PERRY: That's right. We have to provide powerful disincentives for them not to do it, and that's the issue we're facing today with both North Korea and Iran -- trying to find the right disincentives, because the incentive for them to go ahead is very strong, as you described.

REP. SIMPSON: Thank you. As I said, this may be the most important discussion that goes on in Congress. Unfortunately, I don't know enough about it, but I will guarantee you that I'm going to spend a lot of time learning about it, and I hope to be able to call on your expertise and your wisdom in this.

And Senator, I want to tell you I've always been a fan of yours, even though I'm on the other side of the aisle. I think you were a great senator and I appreciate the work you do.

MR. NUNN: Thank you very much.

REP. VISCLOSKY: Mr. Edwards?

REP. EDWARDS: Let me first thank all of you for your distinguished service to our country. And someone who's tried to focus a bit on nuclear nonproliferation issues, I want to thank you, Senator Nunn and Dr. Perry, specifically for trying to continue to speak out and awake our country from what I consider a slumber based on a false sense of security, when it comes to threat of nuclear attack, terrorism, or accident. And I hope you'll keep speaking out.

I get frustrated with Congress. It seems we can be bold when we want to be: the GI Bill, funding World War II, Iraq -- \$10 billion a month once we made that decision to go there. Today a budget resolution -- \$6.6 billion increase in veterans discretionary program; 6 billion increase for veterans' health care, something I'm proud -- along with my colleagues -- to have been a part of pushing. But when it comes to defending America against what President Bush said was the number one national security threat -- what the Cutler-Baker-Nunn report said was the number one security threat -- seems like we fight over relative dimes and dollars.

I think the MPCA program is actually being cut this year. And I realize, even based on your own testimony today, money doesn't solve every problem, but by the same token, some problems can't be solved without resources.

So my question to you, Senator Nunn, Dr. Perry and Dr. Garwin, would be this: If we had 10 billion extra dollars to put in the highest priority needs to protect our homeland from the threat of nuclear accident, terrorism or attack, give me a broad sense of where you would spend that \$10 billion.

MR. NUNN: I wouldn't try to put real priorities to this, but just thinking out loud, I believe that a very -- a worldwide, global, cooperative threat reduction where countries are willing to reduce their nuclear or other dangerous arms is a model -- and General Cartwright mentioned that -- modeled after the Nunn-Lugar program, but updated so it's not just applying to the former Soviet Union. Dick Lugar has been advocating that for some time.

I think the labs, for instance, have such enormous talent there, and I think we've got to give the labs something to do other than make nuclear weapons. They do have a lot that they do beyond that, but that's not -- that doesn't carry through in perception a lot of the times. For instance, I think on homeland security, critical nodes are all-important. What are we going to protect? We can't protect everything. And using technology, using our labs to say how we protect critical nodes -- I think that's worthwhile.

The area I mentioned on verification -- I think the labs have tremendous talent to bear on verification, not just the technical side, but combining the science with the policy, and the policy with hopefully the framework for agreements on verification, which we're going to have to have. I mean, we don't have any verification on bio -- biological. And right now, the administration's talking about a fissile material cutoff, and I give that three cheers -- stopping production of fissile material, weapon-grade material, all over the globe, but they say we can't verify. Well, if we can't, we need to find out how. And if we can't do it to 100 percent, we need to do it to 90, because with national technical means can take up the other, but we've got to work on verification. I'd put the labs to work on that one.

A whole nonproliferation strategy -- and I know they're already involved in some of that. Nuclear forensics: I think that we need to have an ability to identify, as rapidly as possible, any explosion that takes place, any city in the world. By that, we need to work with other nuclear countries to do the same thing, perhaps non-nuclear also. And that

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means forensic capability to know what type of nuclear material has been used in destroying one of the great cities of the world, if it ever happens, God forbid.

The whole question of transparency and technology: Can we buy more warning time, for instance, by putting certain technology that gives us transparency in the missile fields of Russia and in the United States so both sides are assured of that?

What do we do about joint warning? President Clinton proposed joint warning -- in his second term -- with Russia, but it's just gotten lost -- just gotten lost. And as I mentioned, we have a stake in the early warning systems of Russia and eventually will of China, so we need to bring that in. The French and British and other nuclear powers need to be engaged in this, too.

I would also pay a lot of attention to -- if we ever get to the point where we are in this world that Congressman Simpson mentioned, that is the vision of Shultz and Perry and Kissinger and Nunn, if we ever get to that kind of world, we've got to be able to reconstitute. We can't project the future; we've got to be able to put things back together and quickly. I'd have the labs forward thinking on some of that.

I also believe that we need to -- I would increase -- I know we've had terrible security problems, and that's one thing, but I think if the security problems we've had at our labs prevent lab-to-lab cooperation with the Russians, for instance, and eventually even the Chinese, I think it's against our long-term security interests. I think we need to find a way to have security and lab-to-lab work on that.

Again, I repeat, the joint warning. I think a lot of work needs to be done on joint warning. I know that's not just the lab, but that's where I would -- those are the things I'd be putting my money on. That's a long list, and I don't have it quantified, but that's where I would put my money.

REP. EDWARDS: Thank you.

Dr. Perry?

MR. PERRY: Certainly, there should be a greater effort in securing our nuclear weapons and facilities, but more importantly, I think -- because it's been totally neglected -- there's a matter of securing the fissile material or the commercial reactors and the research reactors. It's not more important; it's only more important because it's not being done, and the others are being done to a degree. I think probably \$10 billion could profitably be spent in doing those things, along with the things that Senator Nunn described, but I want to emphasize it takes more than dollars. Dollars are necessary but not sufficient; it also takes political capital.

Time I was secretary of Defense, I suppose I spent one-third of my time working on the reduction of the nuclear threat -- one-third of my time. And that's what I mean by political capital. Extend that to other people involved.

And finally, it cannot be done by the United States alone. It takes international cooperation. As a minimum, all of the nuclear powers have to be engaged in working at this. Even if we spend all the resources and put all the political capital and do all the right things, we cannot solve the problem by ourselves.

REP. EDWARDS: Mr. Garwin?

MR. GARWIN: Well, in an expanded Nunn-Lugar program, I would want to make sure that most of the money is spent in the partner country, where it will have some motivating effect on them. And that also makes it attractive to other supplier nations to provide funds. Rather than to pay for things in our country, they would pay it where the threat is being reduced.

We need to spend more money on thinking -- thinking is cheap, but it doesn't cost zero -- analyzing various levels of nuclear weapons and the paths toward zero, and evaluating negative and positive security guarantees. Just as the international fuel bank is not just for our friends, if we really want people not to have nuclear weapons to support their own security, then we have to promise them some negative security guarantee -- they will not be attacked with nuclear weapons; maybe they will not even be attacked -- and positive security guarantees: If they are attacked with nuclear weapons, then there will be a response, not with their own nuclear weapons, if they don't have them -- because they don't have them -- but with others.

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So looking again at these things that were important in the run-up to the 1970 Non-Proliferation Treaty, they're still important now.

GEN. CARTWRIGHT: Congressman, could I have a dollar of that?

REP. EDWARDS: Absolutely, General Cartwright. You've earned that right through your great service.

GEN. CARTWRIGHT: And I would not disagree with anything that you've heard already.

I would just add the idea of a collective defense -- and going at a collective defense at the low end and the high end of this discussion -- to get a joint warning, but also to reinforce programs like State's Proliferation Security Initiative, et cetera.

But the construct that we have worked hard with the Russians has been this Joint Data Exchange Center, where we could have the dialogue about warning time, where we could exchange real-time data that something was going on in the world and you need to know about it. We need to know about it. We don't know exactly what's happening. There's ambiguity here, but let's have that -- have the data exchanged in real time.

That initiative has bogged down between our two countries. We've got to find some way, either through a different construct, but to get that exchange of information in real time so we have situation awareness. From a military-to-military standpoint, it's just absolutely critical to be able to have a conversation and acknowledge the fact that first information is often wrong, but at least we're all looking at the same first information and working it. So the Joint Data Exchange Center, to me, is a concept that we are exploring with the Russians, but ought to go much broader to an understanding collectively of what's going on around us.

And the last half of that dollar that I would look for would be many of the capabilities that we have fielded today, either in the forensic side of the equation or in the detection side of the equation, focus on point, right where you are. They have a very small radius of regard, measured in feet. We've got to get to broad-area detection: broad-area detection of fissile, broad-area detection of people who are moving around that have anomalous behavior, and we can go query "Why are you doing what you're doing?" And oftentimes, we go to the point and we defend a small area, but we miss the forest. And so the technologies associated with getting to broad-area detection -- in understanding of patterns and anomalies -- is also worth investing.

REP. EDWARDS: Mr. Chairman, I'll defer any additional questions for the next round.

REP. VISCLOSKY: Dr. Perry, if I could begin with you, as former secretary of Defense.

At an earlier question was General Cartwright about where we should be, in an administration determination, as to what the stockpile should look like as far as our national security -- what its components should be, what the number of warheads should be. And apparently, from the comments you've made, General, there is work being done, but there's not a plan in place. And again, my concern, before we go down our RRW road, is where do we want to end up?

If we are not satisfied that the administration is going to in the shorter term be able to prevent -- present to us, as apparently the British government has to theirs, what that final plan looks like, how can we best jump-start this process with the administration?

You were secretary of Defense. What type of action would be most effective, that we could take in a positive fashion, to make sure this is done so we know where we want to be before we start down the road?

Now, Mr. Hobson, in '05, called for a study, and here we are in '07 and we're talking about it, but we don't have a plan with specificity in place. How do we arrive at that? How can we help facilitate that? If nothing else, how do we force that issue?

MR. PERRY: It's almost 20 years since the ending of the Cold War, and the whole set of nuclear policies that were developed for the Cold War are really not appropriate to the world we live in today. And so I think it's long overdue to have a nuclear plan that reflects -- a nuclear policy that reflects this new world that we're in, and that that nuclear policy of nuclear plan ought to be able to be shared -- should be made -- it should be able to be shared with the appropriate committees in Congress. And it should include not only issues about what numbers we need and what the composition

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of the forces would be, but on what a future trajectory of those numbers in our forces should be, and what kind of R&D is needed to support it on into the future.

So I think it's entirely appropriate for that kind of a plan to be available: appropriate to the world we live in today, where nuclear terrorism is the major threat, and that it should be shared with the committee.

REP. VISCLOSKY: Thank you very much.

General, a number of witnesses, in particular Senator Nunn, has talked about warning time and hair triggers. Could you explain to the subcommittee, from your perspective, the implications, as well as the obstacles for implementing such a recommendation? What has to happen here? How do we proceed down that road to increase, if you would, warning times and to remove the hair trigger between ourselves, in particular, and the Russians?

GEN. CARTWRIGHT: The construct that -- we've got witnesses here that have lived through much of this, but the construct that we used in the Cold War to identify levels of discomfort between us and the Soviet Union at that time was really the construct of warning time. It gave us a shock absorber so that if either party got inside of what were established limits, that there was a way to respond and posture in a visible way to let your adversary know wait a minute, you're moving inside my comfort zone. And without putting a number of minutes or hours to it, but the proximity of forces, the ability to close, was how we worked that.

And the knowledge through both verification protocols and through sensors on both sides was the way that we used to determine whether somebody had gotten inside that warning time. And if they did, then you would take action to posture -- increase your readiness -- in a visible way to let them know that they had, in your mind, encroached on --

REP. VISCLOSKY: That's the Ohio State fight song. (Laughter.) Not the Notre Dame fight song.

I didn't mean to interrupt, General.

GEN. CARTWRIGHT: Go, Big Ten. Yeah, isn't that good? (Laughs.)

REP. VISCLOSKY: It's a long story. (Laughter.)

GEN. CARTWRIGHT: Today, the difficult challenge that we face is that in the ballistic missile side of the equation, the short and medium range are way inside of what we would normally call enough warning time to be able to step back and offer other venues than kinetic force to persuade our enemy to do something different.

That's the danger on the missile side.

Add to that the extremist who gives really no warning and is very difficult to detect or deter and you've gone way inside of what was, for the Cold War, a very good way to communicate back and forth between you and your adversary as to whether or not they were doing something that made you uncomfortable and hopefully drive to a discussion about intent, and then posture yourselves appropriately.

I want to certainly endorse the idea of more warning time. The difficulty is that many of the adversaries we face have systems that avoid the ability to detect their intent soon enough to do something about it credibly other than force. And so that's the very difficult challenge that we're facing.

For the larger construct of ballistic missiles and the construct of hair-trigger postures, we have certainly reduced our posture since the Cold War. We don't have bombers sitting at the end of runways and loaded. We don't fly weapons anymore. We've reduced the number of missiles substantially; the last Peacekeeper came out of the force last year. We've reduced substantially our last land-based deterrent, which is the Minuteman 3 right now. That has come down in force structure substantially. It is, though, the force that is in ready.

And the question is how much of that do you need? We've reduced it substantially, but we still have out there -- again, and in the words of others, I have to live in the world that we're really in, and there are those out there with capability that can operate almost what we call tactical warning -- it's just flash to bang. And so you have to make sure that you have postured the country in such a way to do your best to deter that. How much is needed is substantially less than the Cold War.

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REP. VISCLOSKY: Okay.

For Senator Nunn and Dr. Perry, I'd like to almost invert the discussion we've had at the moment. And reference has been made to the Bunker Buster and can still remember an article that was published. And it was fleeting, but the Russians were considering building a Bunker Buster because we were considering building a Bunker Buster. And at some point, you almost think you're in a Peter Sellers movie.

I would ask you about the arms control implications of the proposed RRW program and whether or not they have been completely thought out by DOD, NNSA and the laboratories.

For example, if the tables were turned and Russia or China had figured out how to construct a new warhead without full-scale nuclear testing, and were constructing them and were deploying them, and if we hadn't figured that out yet, my sense is Congress and the administration would be calling for swift action because alarm bells might be ringing.

And would you comment -- and I guess, in a sense, I'm trying to put you in the head of potential adversaries, but what might their reaction be?

MR. NUNN: Well, I believe that's a question we ought to ask on a lot of different fronts, including the idea about Trident conventional. What would we do if the Russians were putting conventional on their submarines or ballistic missiles? And what would we do if China were? Because at some point they will if we do.

I think on the one hand, for instance, General Cartwright's instinct about going more conventional rather than nuclear is exactly right. And I'll applaud that he's thinking that way because he's looking for alternatives. And I think he's very correctly realized that we can do a lot of things with conventional now that we can't -- we could formerly do only with nuclear. But when you get into what would we do if were Russia and we were developing RRW, I don't think it would have the same threat to them that the possible Trident conventional would have. But I believe that it's the whole atmosphere. It's the environment.

And I think if we had an environment where we were dealing with Russia, for instance, and saying to them, "We're working on an RRW. We want to make it safer. We want to make it more secure. We want to make it where terrorists, if they were to get one, or a illegitimate user were to grab one, they couldn't set it off. We think it's in our interest and your interest for you to work on that, too. Let's see if we can't share some technology on this. I mean, we ought to want everybody's weapon out there, whether it's ours or anyone else's, not to be able to be set off by terrorists.

So if we had the RRW in that context; if we had the RRW in the context of working with the other nuclear powers to implement Article VI over a long period of time -- in other words -- a vision; if we had RRW in the context of a ratified test ban treaty, all of those things would so change the atmosphere that we would have a whole different set of views on this subject.

So I'm not saying that don't ever develop the RRW. What I'm saying is we can't afford to do it in this atmosphere unless there's something in the classified world that I don't know about that denotes urgency, which I don't see in the unclassified world. We can't afford to do it in this atmosphere without being misperceived, not only by Russia, but by many others.

And I would say the same thing, Mr. Chairman, about deploying warning systems in Czechoslovakia, which is in the newspapers in the last several days. There's a real case for that, I'm sure, but it needs to be in concert and consultation with other people that don't misperceive it.

I think all of those things have got to be in a context and a sequence that make sense in an international sense. That doesn't mean we give anybody a veto over what we do, but it does mean that we clearly communicate and we have our military leaders meet with each other on a regular basis to talk back and forth.

If you look at the mutual interests securitywise -- I'm not talking about civil liberties and all of that for the purpose of this, but if you look at the security interest of Russia and the United States today, it's astounding to me how many things we have in common, and yet neither country acts like it. And the window is not closed, but it's getting more and more narrow.

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So I think we've got to change our mindset. And when I say "we," I think the Russians have to also. They are relying more on nuclear weapons now than they were. They're doing what we did during the Cold War, which is we knew we had conventional problems in Europe so we went to an early first-use policy, and it was based on conventional weaknesses. They have that in reverse now. But military-to-military discussions can handle a lot of this. I'd like General Cartwright to be able to say to his Russian counterpart, "Tell me what's bothering you about your warning time. Tell me why you need to go to nuclear weapons. Is there anything we can do about it? Give me a list."

That's the kind of dialogue we have, but General Cartwright's got to have permission of somebody to do that -- secretary of Defense and the president of the United States. And if I were in Congress now, I'd be having those kind of conversations with our leaders saying, "Let's give our military people some authority. They are smart people. The Russian people are smart."

So all of this gets to your question, which is a really good question: What would they think? We've got to understand that, and again, we have an existential threat -- an existential stake -- in basically the Russians not ever making a mistake. And if you look at the history of the Cold War, for a long time we had a first-use policy in Europe. We still officially do, but it's not as relevant now. And that meant if we got hit with conventional forces, right at the very beginning, we were going to use -- possibly use nuclear forces.

I came to the conclusion in my first visit to NATO we were going to use them. And the commanders were going to ask for first-use authority long before any president thought they were going to get that request, because they knew their weapons were going to be overrun with conventional forces and they would either have to use them or lose them.

So we had a policy -- during that whole period of time -- we called "extended deterrence" as long as it worked. If it hadn't worked, we would have called it "Armageddon" because that's where we were heading.

So fortunately, we're not in that policy now, but other countries have those same reactions when they feel that their conventional forces are weak. Long answer to what I think is probably the key question.

REP. VISCLOSKY: Senator, thank you.

Dr. Garwin, you had mentioned in your opening remarks that the labs were excited about the opportunity, as far as design. I might use the word "giddy." But in seriousness, I look at the British complex, and my understanding, recognizing that there is a difference in scale here, is that there is essentially a unified site with a permanent staffing of about 1,000 people. United States, we have three nuclear weapons laboratories, three nuclear weapons production plants, two nuclear weapons sites, and about 40,000 personnel.

And the question is -- because I would not want to lose skill sets and abilities of those designers, because it is a serious matter -- how many people are actually involved in this? How do you maintain that ability? Are there other options besides RRW?

MR. GARWIN: It would certainly help to have --

REP. VISCLOSKY: And the Senator actually mentioned a whole litany of activity.

MR. GARWIN: -- certainly help to have a policy, which set the future size of the nuclear weapon force, because that would determine the capability for building them and maintaining them.

We have this vast force. We probably have 12,000 nuclear weapons that will eventually need to be dismantled, and so whatever we do with the existing force won't change that requirement ultimately. There is no great urgency, and that's a limited amount of effort that goes into it.

I'd like to discuss, though, a point. I think that this question of short warning time and hair-trigger posture deserves a bit more discussion.

If one relies on deterrence by threat of punishment, there is no necessity to react quickly. The fact that the Russians don't have very good warning against something doesn't matter, but if one has a problem of vulnerability of the entire force so there is no possibility of deterrence by threat of punishment because your entire force can be wiped out, that's a

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reason to go to launch under attack, to launch on warning, not to preemptive strike because the Russians don't have that capability.

But they do worry that the United States has in its submarine force the ability, with accurate nuclear weapons, to destroy all of their land-based missile force, and that gives them a lot of problems. We made a big mistake, in my opinion, in the 1970s when we increased the accuracy of our submarine missiles, by policy, to make them silo killers. And the RRW, the W76, they are silo killers because of the accuracy of the warheads and the missiles.

So that's where our problem is. We could get rid of that problem A, by increasing the -- improving the warning system, but more easily, by a cooperative measure so that the Russians could verify that our submarines are not in a state where they can launch their nuclear weapons in a short time. That would require a lot of thought -- a lot of discussion.

You mentioned the British system. I testified January 23rd to the Defense Select Committee in the House of Commons about the decision to replace their four submarines that carry the U.K. Trident missiles -- our Trident missiles that they lease. But they have their own warheads because under the NPT we are not allowed to give them or loan them warheads. We can give them information, and there is a lot of sharing of information between the United States and the UK.

So they do have this single site at Aldermaston that takes care of it. They don't have to build the missiles. Of course, our DOE doesn't build the missiles. And they have the peer review, essentially from the United States, that is because of the sharing arrangements. They don't need two labs of their own. And incidentally, they think their warheads are going to be perfectly satisfactory for several decades, and then they will need some kind of replacement for the Trident warhead because the Tridents are going to be around for a long time.

My own suggestion to them is that rather than rushing to replace their submarines with something that will carry the Trident missiles - 160-warhead total in their force down from 200 -- they ought to start looking at a small, single warhead submarine-launched missile. Then they could have much smaller submarines and cut the overall cost of the program, even if they would maintain the 160-warhead force with one submarine at a time -- one submarine always in the patrol area.

REP. VISCLOSKY: Mr. Hobson?

REP. HOBSON: One of the things that troubles me -- and I like the idea of the discussions with the Russians and everybody. I don't mind General Cartwright doing it.

There's these other little agencies around both places -- little acronym agencies -- that don't let us do some of this stuff, and I've run into them a couple of times already of where proposals that we put forward -- one was mentioned earlier -- I think there was -- you can read in one of the papers today that we were on our way to making a pretty good agreement on that until there was a little pushback by an unnamed -- nobody ever talked to me, nobody ever -- little group of people located I don't know where -- I guess they're in the White House someplace; I don't know where they are -- that messed this up. And I'm sure the Russians have this similar type of thing.

If we let the military do it, they'd come to some agreement because they know what this stuff's about, but we get these semi-politico experts -- they style themselves in this thing -- and we get screwed up.

And the other problem is that the way our government is -- probably both of us are constructed; especially ours -- there is no single effort from here. You know, where you used to be has one. We have one. And it's a big problem in consolidation, which I'd like to talk to you about at some point about maybe we need a BRAC. I hate the word; I don't like BRAC. I got realigned in it. I mean, I lost my airplanes for a while. But -- (laughs) -- I didn't get shut down, but I got realigned. That means you lose your airplanes.

But anyway, when you start to do this, there's a huge political uproar when you try to consolidate, even the material or the sites, and you start to look at this thing. And I think that's one of the reasons people walked away from it as rapidly. Although to D'Agostino's credit, he's back and looking at it. But there's a lot of forces out here pushing at these things and you all know this. You've been at this a lot longer than I have. I've been running into some of the things that you've all run into.

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But let me ask General Cartwright a question. On this subcommittee, I think we see -- and we've worked together and I want to thank Pete for his comments, and we have worked together in a partnership, and we're continuing to do that. But we -- I think we see three issues -- the Reliable Replacement Warhead, consolidation and modernization of the DOE weapons complex, and reduction and dismantlement of legacy stockpile weapons -- as clearly interrelated. If there's going to be progress under any of them, we want to see progress on all of them; not just one. DOE and NNSA -- this really might get attention here - however, seem obsessed with RRW and they're not paying serious attention to the other two related activities.

General, how do you see the relation between these three activities and what progress does the Department of Defense, as the customer of this work, expect to see from the Department of Energy?

GEN. CARTWRIGHT: As you indicated, they're all interrelated, and so pushing on one has an effect on the others.

We have, under the -- at the Department of Defense side of the equation - been through the auspices of the treaty, the Moscow Treaty, when drawing down both our delivery platforms and our weapons. We have, where there were synergies, incentivized, or tried to incentivize, and work cooperatively with DOE to allow the savings that were being realized by bringing some of these things out of the stockpile and out of the inventory, from the standpoint of delivery platforms, for a given warhead, say, against a cruise missile.

We take the platform out, they take the weapon out; that means they don't have to do life-extension programs. That means they don't have to -- and so the savings that could be realized we want to see plowed back into making this infrastructure and the process more efficient.

We need to work tighter on that. We need the ability to see, cross-department, the initiatives of one department having an effect on the other department. And then, as many members have mentioned here today, these issues tend to go across several administrations to get to fruition. And so a vision that is sustained as we move through this so that a commitment on the part of one party, in order to see a larger activity occur -- in this case talking to cruise missiles in trying to get a particular warhead and delivery platform out of the inventory in order to incentivize a stockpile reduction, both on the inactive side as we take those weapons out so that we don't have to store them and manage them, and then an infrastructure that is producing what it is we're going to keep, keeping that resilient.

We've got to be able to see that occurring, and it's got to go across some normal boundary lines between agencies, between committees, between departments. We need to find a way to be able to do that better.

REP. HOBSON: Do you have any thoughts on that? I mean, I know you have frustrations on it. How do we fix it? I mean, we're supposed to be money guys, but there've been -- we've been known to fix a few things with some language.

GEN. CARTWRIGHT: We need to state very clearly why we are, for instance, taking a weapon out of the stockpile and what we intend to do with the resources associated with it. And if they are to incentivize activities in another department, ensure that between OMB and the Congress and everyone else that we're allowed to do that, assuming everybody agrees that that's an appropriate action. And then it's -- and keep it in force long enough to actually realize the benefit. I don't want to use the "BRAC" word, but it is the kinds of activities to say that "I'm willing to take a little risk here to incentivize behavior over here." Everybody agrees that that's an appropriate activity, and then if the activity never occurs, you now have a disincentive for ever working together.

REP. HOBSON: Well, you used another dirty word -- OMB. But maybe that --

GEN. CARTWRIGHT: They are our friends. (Laughter.)

REP. HOBSON: Well, maybe. (Laughter.)

As you know, we've had some disagreements with OMB on some things. But -- so what you're indicating to me, maybe they are a control valve here that we could use a little better if we had a little better dialogue. Although I will tell you that OMB, on another program, tried to help me and got whacked -- it's in the paper today; I never said it -- but got whacked by another -- well, I guess it's a little three-letter group. But that may be the place we have to go and the way we're constructed here to try to get something done. And I think Portman is a fair guy. I mean, I don't agree with

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everything he does, and I certainly have some difficulties with some of his staff, but we're trying to work through all that.

But - okay. That's an interesting little twist in this that I hadn't thought about that we might be able to use better, Mr. Chairman, than we have in the past.

REP. VISCLOSKY: Thank you very much. That was very helpful.

Does anybody else want to comment on that?

MR. GARWIN: Yeah. In general, it's a lot easier to think of the green-field solution. We're going to start, build just exactly what we need. Of course we don't know how many weapons we're going to be supporting, which is a problem.

But there's really a lot more potential, in incremental -- that is general and gradual and continuous improvement -- than is generally recognized, but it's hard to get there. Nobody wants his own/her own budget to be cut. They want to maintain their staff. They need to understand that unless they have a credible plan, they're going to be put out of business. Now, you can call that BRAC. Maybe there isn't enough back-and-forth in the BRAC, but that's how to do it, in my opinion.

REP. HOBSON: By the way, when I first came to this committee, there were no business plans in the labs. There are now the beginnings -- they're still not what I would do if I were in business, but we are beginning to get business plans; we're beginning to get vision and goals. Same way in the Corps of Engineers now. They have a five-year development plan and they will have a vision. That's a big change; didn't used to be that way. How long that will continue, I don't know, but we're trying to get there to get a handle on the lab thing that you all talked about.

The labs are the great seed corn in this country left. We don't have that great diversion of just where you can do research anymore. Even the labs are being pushed away from that and we've got to make sure -- Air Force labs are being pushed away from it. And I'm trying to keep that diversity alive with the universities -- we've tried to work together to maintain that -- but there's constant pressure on that. And there's constant -- and you know, you understand -- all of you having been in government understand the parochialism that arises. Certain states have a heck of a lot more of this than others. You were -- if Zack were here today, he'd be talking about Oak Ridge. Somehow we'd get Oak Ridge. Somehow we'd get Oak Ridge in this.

REP. : (Off mike.)

REP. HOBSON: Idaho -- I keep thinking potatoes. And we all get -- (interrupted by laughter).

The interesting thing -- the interesting thing is that you have a chairman here, and a ranking member, for the first time in this committee in a long time, that don't have a vested interest in this, other than good government.

REP. VISCLOSKY: Mr. Hobson, if I could just interject -- also we both serve on Defense Appropriations, so the marriage of the systems and the weapons and the responsibility, both departments have just -- we do feel like we have an obligation to do something positive here, as far as moving this along.

Mr. Edwards?

REP. EDWARDS: You know, in a world of limited resources, we've got to try to assess probabilities. Would any of you care to venture at helping educate us about what are the highest probabilities today of nuclear terrorism, accident, or attack that we need to take action on immediately?

A lot of the policy issues you proposed are going to take years, and they're vital to protect this generation and future generations of Americans. But any areas where maybe the -- maybe it's dealing with dirty bombs, maybe it's doing more in Megaports, but any areas -- given the assessment of the probabilities, we're putting what, eight -- how much are we putting into national missile defense? Is it 8 billion, 10 billion a year? What are we -

I think we put about a little over a billion, billion and a half, in the Nunn-Lugar programs. We put 8 to 10 billion or so in nuclear missile defense. I guess the thrust of my question is are we putting our limited resources where they're most needed today? And based on what probabilities?

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MR. GARWIN: It's not only the probability of the threat emerging, but it's the capability of the system that you're deploying to counter it.

And I've always been a foe of the current midcourse missile defense because my experience in this field is that when the ICBMs are first deployed, by North Korea or anybody else, they will be able to penetrate this midcourse system with simple countermeasures. But that's only a waste of money. It's not very provocative. However, if you can take that money and spend it on something else, you will be better off.

What we are missing is really the response to a terrorist nuclear explosion in a Western city. I think Senator Nunn alluded to this. We need to organize ourselves so that if we lose a couple hundred thousand people, which is less than a tenth percent of our population, it doesn't destroy the country politically or economically.

But we need to have a way to survive such an attack, which I think is quite likely -- maybe 20 percent per year probability, with American cities and European cities included.

And we need to be able to survive that. We have no real planning to do it in the business community or in the government.

REP. EDWARDS: I'm sorry. What did you say, Dr. Garwin, the probabilities were? Twenty percent?

MR. GARWIN: Yes, to have a nuclear explosion -- not just a contamination dirty bomb -- in the next year, 20 percent in my estimation. Could be 10 percent, not 100 percent.

REP. EDWARDS: If that doesn't wake up this country, I don't know what would.

MR. GARWIN: It's not easy to say what you're going to do, because we have to do things differently. We have to disseminate databases. We have to have more expertise than we would otherwise have -- preferably not so concentrated. Companies, in fact, do make provision for one of their buildings to be destroyed; they have auxiliary sites with databases. The country doesn't have that, and I don't know any analysis of what will happen to an entire complex which is subject to an attack.

REP. EDWARDS: When you say 20 percent probability in a given year, are you thinking in terms of the dirty bomb, or a dirty bomb, or a full-scale nuclear device?

MR. GARWIN: No, a full-scale nuclear explosion that is of the order of a kiloton -- a thousand tons -- of high-explosive equivalent. And I have some analysis --

REP. : We're going to go vote, but then we'll be back.

MR. GARWIN: I have some analyses on my website to show the couple hundred thousand people who would be killed, mostly by local fallout -- which didn't exist in Hiroshima or Nagasaki -- because they would -- these would be essentially ground-burst explosions.

REP. EDWARDS: So what -- what are the most likely -- of that 20 percent probability, what are the most likely methods by which that kind of explosion would be brought about? Would it be a bomb in a suitcase parked in a truck? Would it be a dirty bomb? Would it -- give us the most likely scenarios.

MR. GARWIN: Well, it would be in a truck or in a ship just coming into port. Or it could be assembled in an apartment in a city by bringing in highly enriched uranium and building there what's called a gun-type explosive that doesn't need to survive the rigors of air transport and dropping and detonating at a certain altitude. It's already at its target when it's being built. And it's very difficult to detect the highly enriched uranium. We're deploying rings of sensors now, but it does not have a very good prospect even when it's fully implemented.

So first of all, you don't want to have a lot of people angry with you if you have a choice. The less of those you have, the better. But mostly you want to secure the source of highly enriched uranium. And this is not that they're going to enrich it here, or a terrorist group is going to have an enrichment plant; it's that they're going to acquire it from some still poorly safeguarded material in the former Soviet Union, not just Russia, or from stocks in Pakistan or elsewhere in the world.

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REP. EDWARDS: The 20 percent probability that you referenced, Dr. Garwin, was that your own analysis or was that the accumulation of multiple analysis of probabilities?

MR. GARWIN: Well, that's my own analysis. I think Bill Perry is associated with other communicates -- academic - and I guess they may have their own views.

REP. EDWARDS: I mean, I'm shocked by that, as someone who's followed this issue a little bit. And I think if most Americans thought the probabilities were a fraction of that, we wouldn't be debating over whether we're going to cut 10, \$20 million out of MPC&A programs to secure nuclear materials in Russia.

MR. GARWIN: Well, do you --

REP. EDWARDS: Any other --

MR. NUNN: Well, let me first emphasize what Dick just said -- not about the percent, but about the most productive use of our money -- and that is securing nuclear materials that are dangerous nuclear materials, weapon-grade materials or weapon-usable materials all over the globe. That is a no-brainer in terms of the priority because once those materials leave the source, it is infinitely more harder -- more difficult. So the hardest job for the terrorist is getting the nuclear material. From that point on, every step of the way is easier for them.

The easiest job for us is securing the nuclear material. That's why the cooperative program -- the Nunn-Lugar program and an extension of that around the globe -- is so important, but also the GTRI program, where the Department of Energy is making progress on research reactors that are not weapon production factories, but are -- have enough weapons. There's 40 countries in the world have enough HEU -- highly enriched uranium - in research reactors to be able to make a bomb, and the Russians have about half of those in Russia. So, you know, there's a long, long way to go on this, but securing at the source is the best way.

I don't know what the odds are. I've always hesitated to give the odds, but I do know that if you look at an example that a fellow who's pretty good with arithmetic gave me -- and that's Warren Buffet -- he basically says he doesn't know what the odds are either, but if there's a 10 percent chance in one year, and that 10 percent chance persists for 50 years, there's only one-half of 1 percent chance that over that 50-year period, you can avoid it. But if you can reduce 10 percent to 1 percent -- or in Dick's case 20 percent to 1 percent -- if you can do that instead of over 50 years, if it persists at 1 percent a year, instead of it being a half a percent of avoidance, you've got almost two-thirds chance of avoiding -- 67 percent. So this is all about risk reduction and it's all about the highest priority of where you can spend your money.

I'm all for PSI, for instance. I'm all for it. I think we need tiered defense, but I would not want to see more money spent on PSI -- which is after it leaves its source -- than is spent on the source because that's the high priority. So that's the way I would view it.

In terms of your initial question about the likelihood, I can't give you odds -- and I've always stayed away from odds -- but the odds of a terrorist attack obviously are more conventional than any other, in the way I think about it.

The second would be sort of a toss up between chemical and radiological and cyber. Now, we're not talking about cyber attacks now, but believe me, there are countries out there that have got a bunch of young people that are seeing how they can take down a lot of our systems, not just the United States, but the world economic system. So cyber has got to be in there pretty close to the top. I would put bio after chemical and radiological, and then I would put nuclear.

So nuclear is the least likely, but it is the most consequence. You have a nuclear explosion, it not only affects the immediate area; it affects the whole global economy -- the whole global competence -- if every terrorist group out there is going to say, "That was us that did it and we got another one coming if you don't do X, Y and Z." So that's sort of the way I see it.

I know some of you have already seen this, but we tried to put this in terms that people could understand by making a movie called "Last Best Chance." And if any of you want it, we'll give it away; you don't have to pay for it. And that "Last Best Chance" is a nuclear scenario. We tried to make it as factually based as we could; the scenario is fictional. We had Fred Thompson play the role of president of the United States, and obviously Fred took it pretty seriously. (Laughter.)

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So any of you want a copy of it, we'll get it for you.

REP. VISCLOSKEY: That's great. Very well said. (Laughter.)

Dr. Perry and General Cartwright, if you would care to respond.

MR. PERRY: Even if the national missile defense operated exactly as advertised, it is simply irrelevant to a nuclear terror threat, and the nuclear terror threat is the major thing we should be concerned about today.

I cannot put a probability on it. Besides the 20 percent that Dr. Garwin estimated, Graham Allison, who wrote the definitive book "Nuclear Terrorism," estimates a 50 percent chance over a 10-year period, which is not completely inconsistent with Dr. Garwin's estimate of 20 percent in one year. In any event, I would say it is not a remote possibility. It's a very real probability -- much, much higher probability than a nuclear exchange during the Cold War.

And the costs, we've talked about that. The 100,000 fatalities are certainly one measure of the costs of it, but the economic and the social and the political dislocation would just be enormous -- very hard to imagine.

What to do about that? We have said -- testified before that fundamentally, an extended and emphasized Nunn-Lugar program with a shifting - getting a major emphasis on securing the fissile material in commercial reactors and research reactors has the biggest gap today, I think.

And it -- finally, it does take cooperation of other nations. Whatever we do in this field, we cannot be secure if we do it by ourselves. We need the cooperation of all the nuclear powers, in particular, extensive cooperation with Russia. And that is -- we had that at one time; we do not have it today.

REP. EDWARDS: Is it a naive idea to think about literally spending tax dollars to purchase fissile material, wherever it is? I don't know - have any idea what the cost would be, but I'd -- given the consequences of --

MR. GARWIN: Maybe Senator Nunn could describe one such purchase that's already been made.

MR. NUNN: We did that.

I want -- I think the administration now would have the authority to make that kind of exchange, if need be, but that's something that needs looking at. Do they have the authority?

I know in the case of a venture outside Belgrade, Yugoslavia, that when we first started this Nuclear Threat Initiative in 2001, one of the first people I talked to about securing weapon material around -- that was in the administration was Rich Armitage and we talked about working together.

Shortly after that, he called me and said, "We've got a deposit of highly enriched uranium right outside Belgrade in a little community called Vinca we think is very dangerous. There's enough to make three or four bombs. Do you think your foundation can help on that, because we don't think we have the authority to do the cleanup -- to help with the cleanup. We have the authority to help move it, under existing law, and to help work with the Russians to blend it down, but we don't think we have the authority to satisfy the Belgrade government demand for cleanup of the aftermath, so the whole area will not be out of economic options.

And so we came up -- that was when we had a lot of money; no longer have that, Mr. Chairman -- but we put up \$5 million from our foundation to help on that. And that money is still being spent now. We've just about spent all of it, but we've helped on cleanup. The U.S. government and the Russian government did the rest.

Now, out of that, we like to think, came the GTRI program. We call it "global cleanout," but that's the Department of Energy program Global Threat Reduction Initiative I know you all are familiar with. And I would commend that program to you. I think they've done a lot of good work, not as rapidly as I would like, but they have really worked on it. And I commend the people who are doing that at Department of Energy.

Out of a list of about 20, 25 countries that had high-priority sites, they probably -- on a scale of one to 10, they're at about five -- maybe four or five. So they've got a long way to go, but that doesn't count Russia.

So one question to ask the GTRI people, :Okay, you keep score by the sites that you've identified that really need taking down that you have a chance of working on. What you have excluded is those that you're not going to have a

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chance of working on. So it's not a global view of the threat. And that's something that really -- and it needs a lot of work.

REP. EDWARDS: Thank you.

And it flabbergasts me that, given the consequences of a nuclear attack or terrorist attack with nuclear weapons, that the federal government would have to ask a private foundation for \$5 million. God bless you for being there when we needed you, but we ought to have a system.

Given our \$503 billion Defense budget that we're going to fund today, in addition to the \$145 billion for Iraq and Afghanistan for fiscal year '08, it's amazing we'd have to ask for private money for \$5 million to get our -- get control of some risky highly enriched uranium.

MR. NUNN: I believe, Mr. Vice Chairman, that I think that's been corrected in the law, but you don't know 'til you get the circumstance. So it'd be great if your committee would ask the question, "Do you have the authority now so you that could use your money?" Because we wouldn't -- our own foundation would not be able to repeat that; we wouldn't have the funds.

REP. EDWARDS: Right. Senator Nunn, let me amend the question they should ask: Not only do they have the authority, but are they doing it?

MR. NUNN: Yeah.

REP. EDWARDS: Okay. Well, we'll follow up.

General Cartwright?

GEN. CARTWRIGHT: Just a couple of thoughts. One is that I don't disagree. And I kind of cite, as Secretary Perry did, the Graham Allison work, because I think he put a lot of thought into that about not necessarily the statistical realities, but the likelihoods and why the likelihoods are there.

But you also have to approach this with balance. This is an area -- this terrorist opportunity to bring in some sort of weapon of mass destruction is a threat that we face. We don't face with the same statistical likelihoods some other threats because we have some credible deterrent. And so we don't want to get into "whack-a-mole" or chasing the threat. We've got to look at balance.

I don't disagree -- and as I said in my opening statement, I have a lot of passion that we need to put more focus in the areas that have just been described.

REP. EDWARDS: Right.

GEN. CARTWRIGHT: But we also can't afford to walk away from the other areas where our adversaries currently are in fact deterred from going. And so you have to struggle with balance, given a limited amount of resource, and understanding risk, and we're getting to adversaries who have more agility. So if we move in one direction, they look for a seam in another. This is a very difficult issue to work through. I don't disagree with what's been said, but we do have to deal in balance to make sure we understand.

REP. EDWARDS: Right.

GEN. CARTWRIGHT: -- to make sure we understand.

REP. EDWARDS: Speaking of balance, do you know how much we're spending on national missile defense?

GEN. CARTWRIGHT: You're in the range -- the 8 to 10 billion a year.

REP. EDWARDS: Eight to 10 billion? Where are we on that system?

GEN. CARTWRIGHT: The system, in the test side of the equation -- and I'll take a little bit of exception --

REP. EDWARDS: And I'm going to have to get notes on your answer. I've been just told I have one minute to vote, so I'm going to try to scoot over there.

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Thank you all. It was great testimony today.

REP. VISCLOSKY: Mr. Ryan?

REP. TIM RYAN (D-OH): Thanks, Mr. Chairman. This has been fascinating and I apologize for having to leave. And --

REP. HOBSON: Oh, I'm sorry.

REP. RYAN: I'll be happy to yield to Mr. Hobson for whatever he wants.

MR. GARWIN: Just to finish the missile defense question -- just real quick, the status.

We've had several significant milestones over the past year. This year, we have an even more robust test program in the long-range ballistic missile defense capability, which is discussing the ground-based interceptor capabilities. But the focus that we are really pushing towards right now is to devalue the short and medium-range ballistic missiles: those that hold neighbors at risk, those that act in very quick timelines, those that potentially could come in on the ship or some other vehicle and be used, and start to devalue those assets by holding them at risk with defensive capabilities.

We have had a significant amount of support from other nations in that area -- the Japanese, the South Koreans in the Pacific, and then Europe and many of our Southwest Asia allies are starting now to look at how are we going to develop -- devalue what has currently become a highly proliferated activity in these short and medium-range ballistic missiles. And the worry is that eventually they will have warheads that are weapons of mass destruction.

And so the missile defense piece, I think, is adding to the credibility of the nation to deter some of these threats. The question is one of balance in being able to put our investment in areas broadly enough that we are nimble and can move to the threat, but are not chasing the threat constantly and re-changing our portfolio every day and our investments.

And so, like I said in my opening statement, I believe this area of what we call combating weapons of mass destruction, nonproliferation, counter-proliferation -- all of the work that has been discussed here really needs to be focused on, but I would not kill something else that is working because what you take at risk is that threat will fall into that zone.

REP. VISCLOSKY: Mr. Ryan?

REP. RYAN: Thanks, Mr. Chairman. I have a brief question. I apologize for in and out, but you guys know how it goes.

First, let me say thank you. I mean, this issue is obviously something that is of much concern to us on the committee. And the chairman and Mr. Hobson have led the way on the Bunker Busters and a lot of the other issues you talked about.

And I read with great interest the op-ed you submitted, Senator Nunn and Dr. Perry, "World Free of Nuclear Weapons." I have a basic political question for you two, and I apologize if you've already answered this.

It seems like we have a blueprint of how to get to where we need to be. What political advice -- for those of you who've been in this arena, in such a polarized atmosphere, with a lot of people banging their chest and, you know, who's stronger on defense and who's -- you know, the rhetoric -- what political advice can you give us on how to get the country organized and ready and prepared to help push the politicians along to try to address? Present company excluded, of course.

MR. NUNN: Bill, you want to go?

MR. PERRY: I think for political advice, I'll turn to Senator Nunn. (Laughter.)

MR. NUNN: Well, the way I view it is that a world with no nuclear weapons is the top of the mountain. We can't see it from here, but we do know that we're heading in the wrong direction. We're not heading up; we're heading down -- "we" being the world.

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And I think what we can see is that new nations like - new nuclear powers like Iran, North Korea is heading way down the mountain. And we can see that this nuclear material spread around the globe is heading down the mountain. And we can see that missile proliferation, which the general mentioned, is heading down the mountain.

And we also can see that we've got to find a way to head up the mountain and we've got to look for trails heading up the mountain. And that's the list of steps we mentioned. We think each one of those, in and of itself, moves us up, not down. And we also believe that we have to inspire enough confidence in what we do ourselves, as an example, to get other people to go up to higher ground with us.

So we can't see the top of the mountain, but if there's any chance in the future that our children are going to have time to see the top of the mountain and finally get there, and if there's any chance we ever get to the transition issues that the National Academy of Sciences worked on four years ago -- how do you get rid of the last weapons, what are the weapons in the cave -- we don't have answers to all that. But we do know that, politically and securitywise, none of us that wrote that article would give up our nuclear weapons in this country unless it is part of a overall effort by the world. And that's what we've got to try to mobilize.

Can it be done? Can we absolutely guarantee that we get to the top of the mountain? No. But we can -- we can guarantee that we're heading the wrong way, and that's the political framework.

And I think the first question you'll get from a constituent if you articulate this vision is, "What about the nuclear weapons in a cave?" Well, the answer to that is, we're a long way from getting to the stage of that, but when we do, we're going to make sure they're not there. And that's why work on verification is enormously important. You've got to have verification much better than we have it today and it's got to be cooperative.

In terms of politically, the other thing I would say, you'll notice it's not a coincidence that there are two Democrats and two Republicans on this article. You've got to keep it nonpartisan. You've got to do -- as this subcommittee is doing, you've got to work together. These are too serious -- these problems are too serious to let it break down into partisanship.

I would hope that the discussion of that op-ed would pour out into the presidential campaign, but I hope it pours out where people on both sides embrace the vision, understanding the steps are going to be difficult and they're going to be challenging and they're going to take a long time.

But that's the way I see it, in terms of the politics.

REP. VISCLOSKY: Just have essentially two more questions, and then would turn to Mr. Hobson for the close.

One: General Cartwright -- and in a sense, it's a budget question, and we'll be covering it in the afternoon -- but would address the question to you more from a national security consideration.

That is the W80 life extension efforts were a priority for DOD and NNSA. During the last five budget requests -- between '03 and '07 -- we had about \$600 million set aside. Then last year, a decision was made by DOD that the W80 Life Extension Program was not a priority. The tail number was 600 million, but there's no money in it today. And the question is if it was so important, but now so discretionary, why was that program cancelled? And, secondarily, given whatever the reasons are, is this a means of funding RRW?

GEN. CARTWRIGHT: First, the W80 is associated with our cruise missiles, and we did make a conscious decision to start to draw them down, sooner rather than later, in the reductions, and then to be able to, on the monetary side, realize some savings.

For DOD, those savings were minimal. For the Department of Energy, those savings were substantial. And the dialogue between the two was to incentivize DOE to start to move towards understanding the feasibility of an RRW-like construct in comparison to a life extension program-type construct within the labs. Would that get us the attributes that we wanted for the weapons? This is the feasibility study. We were asking to find out would that get us the attributes we wanted in the weapons and the attributes that DOE sought in the complex?

So the risk that we took was to reduce, quicker rather than slower, this class of weapons and cut off the Life Extension Program sooner to allow the resource to be available to make these trades and go investigate this area.

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REP. VISCLOSKY: Let me address BRAC for one moment -- which isn't technically the subject of our conversation today -- and then try to explain my concerns as far as the complex, looking forward.

And then generally, if any of you would have a comment, I would appreciate it. And then that would be it for me.

I believe that people such as myself, Mr. Hobson and other members of the committee are elected to make decisions and not to, if you would, defer judgment to commissions. I've never thought commissions are what they're cut out to be.

In the case of BRAC -- because you can't ignore the politics, and I wouldn't suggest that every decision made under the BRAC scenario was the perfect decision to make -- but just looking at the raw politics, which is very real and very human and very understandable, I don't know if anything would have happened, but for BRAC.

And looking at the investments and the constituencies of interest and the investment made, I look at the complex too, and am arriving at the same conclusion, but for some type of mechanism such as BRAC. I don't know if it would be possible politically whatever decisions are made to implement though.

The concern I have looking ahead if we would proceed with RRW while we're still doing a Life Extension Program, and while in some undetermined period of time in 2030, we're going to have a different complex, as we proceed on a parallel track and we're using essentially the old complex, as well as a continually modernized complex to do RRW, we don't have a smaller footprint at this point in time.

And my understanding -- and Dr. Garwin could probably address this much better -- this is such discreet and careful work that the machine you use, the hose that's attached, the equipment you use becomes so defining that if it worked once -- and particularly because we're not testing -- you would never want to discard that. And I understand that necessity, in some instances, let alone the impulse.

Given that -- and my fear that if 2030 -- if you would proceed with RRW at 2012, if 2030 Complex isn't also 2012 in the same passion, same urgency, and same determination, as far as what that new complex looked like, is not exactly parallel, it'll never happen. Is a BRAC -- is some mechanism like that how we would have to proceed to force the issue, short of the administration showing a real determination and political courage to make some very, very hard decisions individually?

Anyone have a response or should I just stop?

I'll let it hang out there then, and conclude by thanking each one of you -- and I will have Mr. Hobson close -- for your service, for your effort and participation today, which obviously extends past the time we spent together, and your continued efforts to make sure that the world my two sons are going to inherit are certainly safer than the one left to me. And I do, really, in a profound sense want to thank each one of you for that.

And with that, because this is a partnership here, I will turn to Mr. Hobson to close the hearing.

REP. HOBSON: Well, I too want to thank you.

I want to talk just a second about savings. I don't know where that savings went. And this is what worries me because you might have shut it down, but I think it was like peanut butter; it got spread all over and we never really saw the savings from when we take these things down. And that's something that we've got to try to figure out, and you, as the customer, have to figure out because you didn't get something else that you probably needed along the way. Because it -- I don't know, you don't seem to have any control over that very well, and we need to figure out a way to do that.

Let me just, in closing, say first of all thank you. Thanks for writing the article. Thanks for bringing the discussion up.

These are, as the chairman said, extremely serious problems. You have great experience, all of you. I don't -- I think the thing that concerns me is where do we go from here and how do we get where we need to go. And we need your help, all of you, in each of the roles that you play.

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And I hope you will continue to talk to us and to guide us and to give us advice. And I hope you understand we're receptive to that, because these are somewhat uncharted waters that we're going. And there's suspicions everywhere, but we have to work through those, because in the end, there is destiny here, if we don't do this right, that will not be good for the -- not only this country, but for the world -- for humanity. And I'm not sure that the country understands this, and certainly the world doesn't totally understand where we are because we all get preoccupied with our own eventuality in things as we go through it.

But thanks so much for getting out there and getting out front. I think that the bill that you've got has some great promise if we can get some people to begin to really think about it, and some leadership in this country to think about, because it does kind of go along with another program that's out there that we're a little suspicious of on the monies and times.

But again, we need to look and all look together. So thanks so much for doing this for the country today and the world.

Thank you very much.

MR. NUNN: Mr. Chairman, could I put my whole statement in the record? And then, if you would like, I would put this SAIC digital report in the record.

REP. VISCLOSKY: We would appreciate it very much.

MR. NUNN: Okay, thank you.

**LOAD-DATE:** April 7, 2007

**LANGUAGE:** ENGLISH

**PUBLICATION-TYPE:** Transcript

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