

EXAMINING THE NUCLEAR POSTURE REVIEW

HEARING

BEFORE THE

COMMITTEE ON FOREIGN RELATIONS

UNITED STATES SENATE

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EXAMINING THE NUCLEAR POSTURE REVIEW

WEDNESDAY, MAY 16, 2002

U.S. SENATE,
FOREIGN RELATIONS COMMITTEE,
Washington, DC.

The committee met, pursuant to notice, at 10:51 a.m., in room SD-419, Dirksen Senate Office Building, Hon. Joseph R. Biden, Jr. (chairman of the committee), presiding.

Present: Senators Biden, Lugar and Hagel.

The CHAIRMAN. The hearing will come to order. I apologize for being late, and I, quite frankly, should have had Senator Lugar start the hearing. I was on an Amtrak train that was delayed 25 minutes. But lest you think Amtrak's in trouble, just think of every time you fly. All you've got to do is think about flying, and then you'll feel better about Amtrak.

I'm going to put my statement in the record and I would just like to suggest that there's three key points I'm interested in. One is, despite some of the rhetoric surrounding the Nuclear Posture Review [NPR], it seems to me that it affirms more existing policy than it does break new ground. And, second, is that the NPR's conclusions—the concern I have is that they threatened—may threaten to lead the resumption of U.S. nuclear testing that could unravel nuclear nonproliferation regimes. And the third concern I have is the development of new nuclear weapons, including low-yield earth penetrators that could blur the traditional firewall between the conventional and nuclear weapons and, hence, make nuclear war more likely. They're things that I'm going to want to speak to with our witnesses.

I'd ask unanimous consent that my entire statement be placed in the record.

[The prepared statement of Senator Biden follows:]

PREPARED STATEMENT OF SENATOR JOSEPH R. BIDEN, JR.

Today the Senate Foreign Relations Committee holds a rather unusual hearing, one in which the subject is a Department of Defense document. The reason is that, especially in the realm of strategic policy, decisions regarding the structure and possible use of our nuclear arsenal are fraught with foreign policy implications.

For 57 years, the strategic and foreign policies of the United States have been crafted in the shadow of the bomb. The overwhelming challenge has been to deter our enemies from attacking us or our allies, while also avoiding a conflict in which many millions of innocent people—indeed, whole societies—could perish.

In the post-cold war era, our enemies and our fears have changed markedly. Today, a nuclear Armageddon is more likely to result from accident than from any intentional march to war. While the context has changed, however, our post-cold war strategic objectives remain the same: to deter others, but also to avoid a nuclear catastrophe.

The United States and Russia no longer control other countries' actions to the degree that we did during the cold war. As a result, our non-proliferation efforts have become an increasingly important element in our foreign policy. We can no longer be confident that a minor power with weapons of mass destruction will heed our advice not to use those weapons. So it becomes ever more important to prevent the spread of those weapons.

Four months ago, the administration sent to the Congress—and briefed to the media—its Nuclear Posture Review, a classified, legislatively mandated document in which the Department of Defense and the Department of Energy set forth a strategy for the maintenance and possible use of our nuclear forces. In March, large portions of the Review were made public when they were leaked to the press. This document affords us a vital window into the thinking of our top defense officials on strategic policy.

The Nuclear Posture Review has prompted much public discussion in the last two months, and I have questions about it as well. My concerns may not always parallel those raised by the press. For example, I was not surprised to read that we would consider targeting countries other than Russia or China, or that we would maintain our traditional ambiguity on whether we might use nuclear weapons in response to an attack involving non-nuclear weapons of mass destruction. Those are actually long-standing U.S. policies.

The Nuclear Posture Review did cause me some concern, however, for the following reasons:

1. It isn't forthright. This document was sent to the President and Congress, both of whom have vital national security functions. The authors ought to have made clear how much it ratifies existing policy—on issues ranging from potential nuclear targets to the force reductions that the Pentagon supports—and how little is really new. I worry that our defense officials may believe their rhetoric about putting the cold war and mutual deterrence behind us, when—to me, at least—the Nuclear Posture Review does not really do that.

I think that much of the vaunted “new Triad” of forces is based on hypothetical capabilities that we may not achieve for decades. I worry that basing our strategic policy upon such a distant horizon may cause our defense officials to overlook short-term risks and opportunities.

2. It threatens to lead to new nuclear testing that would unravel the nuclear non-proliferation regime. That's because it opens the door to developing new nuclear weapons that would require such testing. If we were to test because we had discovered a fault in existing weapons that could only be cured through testing, the world would be upset—but nuclear non-proliferation would survive. If we test to develop new weapons, however, the message will be that we value those weapons more than we do non-proliferation. And other countries will take their cue from us.
3. These new weapons could make nuclear war more likely—thereby making us all less secure, rather than more so. Some of the new weapons discussed in the Nuclear Posture Review would be intended to reduce collateral damage or to strike deeply buried targets. While those are understandable objectives, such weapons could blur the distinction between conventional and nuclear war, making it more likely that we would “go nuclear” next time.

One important way in which we have deterred the use of nuclear weapons for over half a century is by maintaining their character as weapons of mass destruction. We made it clear, both to our enemies and to ourselves, that once a nuclear response was undertaken or invited, all bets were off as to where it would end. The Nuclear Posture Review seems to flirt with changing that approach.

Should we be the first country in two generations to use nuclear weapons? Would that lead others to use nuclear weapons as an “equalizer” to counter our conventional superiority? Would the war-fighting advantage that we gained from more usable nuclear weapons really justify destroying the firewall against nuclear war that we and the world have maintained since the end of World War II?

To me, treating nuclear weapons as a handy military tool, rather than as weapons of retaliation or last resort, seems profoundly unwise.

That is why I have convened a group of truly esteemed witnesses to help us understand the Nuclear Posture Review and its implications for our strategic and foreign policy.

We certainly have witnesses of great experience and wisdom today, and I am delighted to welcome all of you.

Our first panel will feature two of the most important strategic thinkers of our day. Admiral Bill Owens, retired Vice Chairman of the Joint Chiefs of Staff, gave

us the “revolution in military affairs” that brought information-age technology onto the battlefield. From the gulf war to Bosnia and Kosovo, and most recently in Afghanistan, we have seen new vistas in the use of precision-targeted military force. Admiral Owens—who now is co-CEO of Teledesic—will speak both as a war-fighter and as one who has looked carefully at the future of war.

Dr. John Foster, former Director of the Lawrence Livermore National Laboratory, served also as Director of Defense Research and Engineering. In recent years, he has headed important expert panels on the state of our nuclear Stockpile Stewardship Program and on our readiness to resume nuclear testing. His recommendations have prompted political debate, and I hope he will explain to us what an increased test readiness program can realistically achieve, why we need it, and why, in his view, it is nothing to be feared.

Our second panel will begin with a most distinguished scientist, Professor Steven Weinberg of the University of Texas. In 1979, Professor Weinberg won the Nobel Prize in physics. Throughout his career, he has combined cutting-edge work with an ability to explain modern science to the rest of us. His books *The First Three Minutes* and *Dreams of a Final Theory* have been best-sellers.

Professor Weinberg has also dealt before with the military and policy implications of modern physics. He is a former member of Jason, and he was at one time a consultant to the U.S. Arms Control and Disarmament Agency.

The second witness on our second panel will be Dr. Loren Thompson, chief operating officer of the Lexington Institute. Dr. Thompson wrote an interesting piece recently for the *Wall Street Journal*, in which he argued essentially that critics of the Nuclear Posture Review should calm down, because all the proposals in it were really aimed at buttressing nuclear deterrence. I look forward to any reassurance he can provide.

Our final witness will be Joseph Cirincione, director of the Non-Proliferation Project at the Carnegie Endowment for International Peace. Mr. Cirincione is a man of many talents who has been a frequent witness before this committee and who was once a staff member of the House Armed Services Committee. He specializes in the nexus between military and foreign policy, and we will count on him to draw together the many points of view that will be expressed this morning.

I understand that Dr. Foster will have to leave early, so after Senator Lugar makes his opening statement, I turn the floor over to Dr. Foster and then Admiral Owens. Following their presentations, I hope we can focus our initial questions on Dr. Foster so as to get the maximum benefit from his presence today.

[The prepared statement submitted by Senator Feingold follows:]

PREPARED STATEMENT OF SENATOR RUSSELL D. FEINGOLD

Mr. Chairman, thank you for calling this hearing. The congressionally-mandated Nuclear Posture Review gives us an opportunity to rethink the role of nuclear weapons in our overall strategic framework.

The horrific events of September 11 brought into sharp focus that the threats of the 21st century are far different from the threats of the last century. During the 20th century, our adversaries were easily named and contained within defined national borders. The forces that our men and women in uniform are currently fighting belong to mobile, well-financed terrorist cells that do not have a centralized structure and exist in the shadows around the world, and even in our own country. This new kind of enemy challenges our conception of traditional warfare and demands a different kind of response, and a different strategic framework.

I am concerned that the Nuclear Posture Review we will discuss today does not adequately address emerging threats. We must ensure that we adopt the best approach for the 21st century.

I welcome the President’s announcement of a preliminary agreement between the United States and Russia to reduce the nuclear weapons stockpiles of the two countries. And I am pleased that this important agreement will be contained in a binding treaty rather than in a less formal agreement between the two Presidents. I urge the administration to include provisions regarding destruction of these deadly weapons and verification of such destruction in the treaty before sending it to the Senate. Only by dismantling and destroying these weapons can we truly achieve the goal of meaningful nuclear arms reduction. As a member of this committee, I look forward to reviewing the provisions of this treaty when it is submitted to the Senate for its advice and consent.

While I applaud these reductions, I remain concerned that the overall theme of the Nuclear Posture Review seems to point to increased reliance on nuclear weapons. I am particularly concerned about proposals for so-called “mini-nukes,” which

could be fired at smaller targets or be used to penetrate bunkers buried deep beneath the Earth's surface.

The United States should not be in the business of making nuclear weapons the preferred alternative on the battlefield. Nuclear weapons loom as the weapon of last resort. Mini-nukes threaten to dangerously blur the line between conventional and nuclear warfare by potentially lowering the threshold for a decision to use these devastating weapons. By developing mini-nukes, the United States could well launch another arms race as other countries seek to match or exceed our new capabilities. And we should consider the possible negative health effects that such weapons could have on our men and women in uniform, who would be forced to serve in an environment polluted by nuclear radiation.

Thank you, Mr. Chairman.

The CHAIRMAN. And I yield to the Senator from Indiana, Senator Lugar.

Senator LUGAR. Thank you, Mr. Chairman..

Senator LUGAR. Mr. Chairman, the strategic environment during the cold war was characterized by high-risk but low-probability of ballistic-missile exchanges in the use of weapons of mass destruction. Today, however, is the opposite case. We live in a lower-risk but higher-probability environment with respect to ballistic-missile exchanges and the use of weapons of mass destruction.

Whereas, previous strategic calculations assumed almost limitless offensive nuclear weapons systems but more or less rational actors, experiences with Saddam Hussein, Osama bin Laden, and others make this assumption less plausible today. President Bush has correctly pointed out that the cold war nuclear strategy is not appropriate for the current threat environment. While nuclear weapons will continue to play a role in United States defense policies, they will not be our primary form of deterrence. We must continue to move the world, while we exercise necessary care and prudence, away from nuclear-dependent deterrence.

I agree with the Nuclear Posture Review's conclusion that, "The United States will no longer plan, size, or sustain its forces as though Russia presented a smaller version of the threat posed by the former Soviet Union." Instead, we must configure a force to deter a number of different threats emanating from many sources. Our nuclear triad must undertake the same metamorphosis as our conventional forces. We must be lighter, quicker, more able to adapt to the changing environment which characterizes the post-cold war era. By moving to a smaller nuclear-force posture, we must have a very high level of confidence in the safety and security of our stockpile. The safe maintenance and storage of these weapons is of the utmost concern. We cannot allow them to fall into disrepair or permit their safety to falter. As our force shrinks, this reliability must grow if we are to maintain full confidence in our nuclear deterrence.

On Monday, President Bush announced that the United States and Russia had reached an agreement to lower the number of deployed warheads to between 1,700 and 2,200. And the treaty will be signed on May 24 during the United States-Russia summit. I believe this treaty marks the step toward a safer world. I plan to work closely with Chairman Biden and Senator Helms in seeking a swift ratification of this important milestone. I understand the administration tends to submit the treaty to the Senate promptly, and I've proposed, respectfully, Mr. Chairman, that the committee

aim to report the treaty to the floor in an expeditious manner so that ratification might occur prior to adjournment this year.

Senate ratification before the end of the year will show leadership on this important matter. The Russian Duma and the world will be watching and studying our enthusiasm and our commitment to securing ratification. This agreement is an important achievement, but the agreement and others like it are only successful if they are fully implemented by both sides. Only then will the security and stability we seek be enhanced.

Unfortunately, the benefits of the treaty are not assured. Russia cannot afford to dismantle their weapons system through resources currently available. The Nunn-Lugar Cooperative Threat Reduction Program is the means by which the United States assists Russia in meeting its dismantlement obligations under the START I Treaty. The need for dismantlement and assistance will continue.

Under the START I Treaty, the former Soviet Union identified 13,300 offensive warheads. To date, Nunn-Lugar has deactivated 5,896 of these weapons. In addition, the program has destroyed 1,200 missiles, more than 900 missile launchers, 100 long-range bombers, and 22 missile submarines. As important as the crucial role that the legislation has played in implementing the recently announced treaty, some in Congress continue to drag their feet in giving the President the power to carry out these efforts. Each year, the administration is required to certify that Russia is committed to arms control goals. Complete Russian accountability and transparency in the chemical and biological arenas have been lacking. As a result, the administration has now requested a waiver from that certification as a part of the current supplemental appropriation legislation. In the meantime, although existing programs may continue, no new activities to dismantle or destroy weapons of mass destruction can be started and no new contracts can be finalized.

Some in Congress oppose granting the President a permanent waiver authority in order to implement Nunn-Lugar, but, absent congressional passage of a waiver, Russian treaty implementation will lag far behind, and our common security goals will be in jeopardy. As President Bush is concluding and signing a treaty with Russia to take nuclear weapon levels down to near 2,000, some in Congress are actively working to stymie the efforts to ensure timely and complete dismantlement of those same Russian weapons stockpiles.

In sum, I believe the No. 1 national-security threat facing the United States is the nexus of terrorism and weapons of mass destruction, and there is little doubt that Osama bin Laden and al-Qaeda would have used weapons of mass destruction on September 11 if they had possessed them. It's equally clear they made an effort to obtain them. This treaty, although not a silver bullet to the threats that confront us, is a tremendous step forward in meeting our obligations under the nonproliferation treaty and reduces the chances of nuclear war.

But equally important, Congress must provide the President with the authority to carry out, with the Russian's cooperation, the necessary destruction of weapons in Russia. Absent such action, our President and our Nation's good intentions will fail, because Con-

gress refused to grant the President the authorization to see his and our goals through to conclusion.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. Senator Hagel, did you want to make—

Senator HAGEL. No, Mr. Chairman.

The CHAIRMAN. Let me just make two brief—not responses, but points with regard to your efforts, Senator Lugar to enhance, not see diminished, the cooperative threat-reduction efforts, I just want you to know you have my full cooperation and, I think, of the vast majority of the Members of Congress.

Second, it is my intention, as I told the President yesterday when I saw him at the Police Memorial, to move on the treaty as rapidly—as soon as it's submitted. In his usual folksy way—he's a really engaging guy—we walked up on the stage, walking by, and he said, "Well, it's a treaty, Biden, you owe me," or something to that effect.

And so obviously, if I didn't move on it quickly, because, as you know, you and I were very straightforward about the need for there to be a treaty. But at any rate, so I assure you we will move that as rapidly as we possibly can.

Our first panel will feature two of the most important strategic thinkers of our day. Admiral Bill Owens, retired Vice Chairman of the Joint Chiefs of Staff, gave us the, quote, "revolution of military affairs" that brought information-age technology into the making of war. For the gulf war, Bosnia, and Kosovo, and, most recently, Afghanistan, we've seen new vistas in the use of precision-target military force that I think Admiral Owens is most responsible for. He is now the co-CEO of Teledesic, which he will speak both as a warfighter and one who has looked carefully at the future of war.

And Dr. John Foster, a former Director of Lawrence Livermore National Laboratory, served also as the Director of Defense Research and Engineering. In recent years, he's headed important expert panels on the state of our Nuclear Stockpile Stewardship Program and in our readiness to resume nuclear testing. Dr. Foster's recommendations have prompted a political debate, and I hope he'll expand on that and explain to us what an increased test-readiness program can realistically achieve and why we need it and why, in his view, there is nothing to be feared by such a test—such a proposal.

Dr. Foster, I understand you have a time constraint. Is that correct?

Dr. FOSTER. Yes, Mr. Chairman.

The CHAIRMAN. Admiral Owens, would you mind if we begin with Dr. Foster?

Admiral OWENS. Not at all, Senator.

The CHAIRMAN. Dr. Foster, the floor is yours.

STATEMENT OF JOHN S. FOSTER, JR., PH.D., FORMER DIRECTOR, LAWRENCE LIVERMORE NATIONAL LABORATORY; FORMER DIRECTOR, DEFENSE RESEARCH AND ENGINEERING

Dr. FOSTER. Thank you very much, Mr. Chairman, members of the committee. In 1999, Congress established the Panel to Assess

the Reliability, Safety, and Security of the United States Nuclear Stockpile. This prepared statement represents the views of my fellow panel members, Dr. Harold Agnew, Dr. Sydell Gold, Mr. Stephen Guidice, and Dr. James Schlesinger.

The panel observed the nuclear weapon program for 3 years. We issued our third and final report last March. In performing our assessments, the panel used as a benchmark the longstanding commitment of this and previous Presidents that sustaining confidence in U.S. nuclear deterrent capabilities is a supreme national interest. Our work has focused on the steps necessary to manage the weapons stockpile and its supporting program accordingly.

You've invited me to comment on issues related to the Nuclear Posture Review. The NPR addresses questions involving both technical and policy considerations that go beyond the scope of the panel's charter. There are, nevertheless, several areas in common. And in those areas, the panel found the NPR to be quite constructive. Many of the programs and initiatives in the NPR address the panel's concerns that the Nation needs to do better if we are to do the best we can to sustain confidence in the stockpile without nuclear tests.

My remarks today will cover those common areas. The panel did not address issues related to the size of the stockpile, either active or inactive. We did not assess the logic of the proposed new triad or strike capabilities, defensive capabilities, and infrastructure; nor did the panel examine specific requirements for new weapons. But major challenges remain.

I begin with the context. The panel and the NPR describe the current situation with the weapons program in much the same way. The program is entering a very challenging new phase that will challenge the Nation's ability to sustain the existing stockpile.

Weapons are aging. Some mainstay weapons, such as the W76 Trident warhead, are already reaching their 20-year design life. Several weapons are showing disturbing signs of deterioration and other problems. Owing to improvements in our assessment tools, we now are discovering that we had been overconfident in assessing some of our existing weapons. The W87 ICBM warhead is being refurbished. Last year the decision was made that three more warhead types, the W76, the W80, and the B61 bomb, will undergo extensive refurbishment in the coming decade.

Sustaining high confidence in these complex systems as we introduce different components, new materials, and new production methods, make design changes to warheads, and utilize a new generation of people, assessment tools, and refurbished facilities, is an unprecedented technical challenge for the laboratories and the production complex. Under these difficult circumstances, I don't think that anyone should be surprised that the confidence in the nuclear test pedigree is deteriorating. Stewardship must adapt.

To sustain confidence in the face of these challenges requires a transformation of the weapons program. The necessary tasks ahead demand capable tools, people, and facilities, as well as the most rigorous available processes for designing, assessing, certifying, and manufacturing our nuclear warheads. The panel outlined initiatives in six areas. Each of these areas was addressed to some degree in the NPR.

First, it is imperative that we strengthen stockpile surveillance, assessments, and certification. These processes are the day-to-day foundation for understanding stockpile safety and reliability. They also will be critical for judging our confidence in the warheads that will be refurbished over the next decade. As the technical challenge of maintaining the stockpile grows, these processes must be as rigorous and probing as the responsible stockpile stewards know how to make them. Decision makers need to be apprised of all the viable options for sustaining confidence. Key to this is sustaining the competition of ideas between the nuclear design laboratories, which has been a critical foundation for the weapons program for five decades and is the *raison d'être* for two such laboratories.

The panel recommends that the annual certification process entail the identification of issues that may undermine confidence as an assessment of the relevant alternative options for sustaining confidence at each level of the assessment process—that is, the technical and the military and then the national.

We also recommend broadening the scope of annual certification reporting to encompass issues concerning the full spectrum of capabilities necessary to sustain confidence. This would require significant changes to current practices affecting several executive branch activities and, the panel believes, national level guidance is needed to shape the needed process. The panel urges Congress to support our proposals for processes that would engage the laboratories, DOE, and DOD in obtaining an unvarnished and complete assessment of stewardship issues and options.

Second, the administration and Congress need to articulate and fund a balanced, forward-looking weapons program and allocate resources to the highest priority deliverables. Such a program would meet requirements for weapons refurbishment while at the same time adequately supporting the exploration of advanced concepts and maintaining leading capabilities in weapons-relevant science and technology.

NNSA, the National Nuclear Security Administration must provide the leadership by creating a program that defines the essential deliverables for stockpile stewardship and that shows how resources are allocated to provide these deliverables. A renewed focus on deliverable products is essential to drive the need for restoring the weapons complex and training a new generation of stockpile stewards and for assessing longstanding management deficiencies.

This committee is well aware that other nations continue to maintain and adapt their nuclear arsenals and that there is continuing proliferation of weapons of mass destruction and their delivery methods. Technological surprise has occurred in the past and is something that we must guard against. The work on future concepts and technologies is needed to assess intelligence information, to avoid technical surprises, as well as to train stockpile stewards, and to provide alternative options for addressing any problems that may arise. The panel also emphasizes that it is essential for Congress to be kept apprised of developments in foreign weapons programs and their potential implications for U.S. security.

Third, to sustain the nuclear stockpile, we must restore an adequate weapons complex. Today, many capabilities are missing or deficient. As you know, the United States is the only major nuclear

power that is unable to manufacture the nuclear components for its nuclear weapons. Restoring these capabilities can take a decade or more. In the meantime, we run serious risks.

A plan is needed to explain, and we need to get started now. The adequacy of the production complex is a critical factor in determining the appropriate size of the inactive reserve and of weapons and the pace of dismantlements. With the necessary capacity to repair or produce weapons, the United States can relieve our dependence on an inactive reserve.

Fourth, test readiness needs to be addressed much more realistically. This is not because a need to test is imminent, but because prudence requires that every President have a realistic option to return to testing should a technical or strategic events make it necessary. Our current readiness to return to testing is 2 to 3 years. The panel recommends the administration and Congress support test readiness of 3 months to a year, depending on the type of test. When the Senate rendered its advice and consent to the START II Treaty, its resolution of ratification stated that the United States would commit to readiness to allow testing to resume within 1 year.

Fifth, NNSA needs to provide the strong leadership Congress sought when it created that organization in 1999. The NNSA inherited an extremely difficult situation when it was created. DOE experienced large budget cuts in the early 1990s and was never able to establish a coherent long-range vision for the program that was consistent with the available resources. NNSA was created to address these challenges and to rectify other longstanding DOE management weaknesses. NNSA needs to establish clear lines of authority, responsibility, and accountability. Laboratory directors and plant managers should be tasked and enabled to meet the requirements, standards, time lines, and budgets established by the NNSA leadership.

The panel reviewed NNSA's recent report on its proposed new organizational structure. In principle, the proposed approach can be made to work. It is now time for decisions, communication, and disciplined implementation.

Sixth, while the panel's focus has been mainly on the NNSA weapons program, we also considered the related nuclear program activities in the DOD. Three specific actions are recommended. One, strengthening the Defense Threat Reduction Agency's programs for understanding weapons effects. Two, creating in DOD a systematic annual assessment of its delivery platforms and integrated nuclear systems that parallels the process for the weapons stockpile. And, three, reassessing the need for certain weapon requirements in view of the NPR, especially those relating to hostile environments.

Expectations. The coming year will be critical in transforming the weapons program to meet the coming challenges. We should expect specific actions in several areas. Within this year, NNSA should complete its reorganization, resolve organizational relationships with DOE headquarters and develop a plan for reducing unnecessary administrative burdens. The Secretary of Energy should complete a review of DOE orders and directives and remove all unnecessary duplication of staffs. NNSA should clarify program man-

agement roles, responsibilities, and authorities. NNSA should create a future-years program plan and budget defining deliverables, priorities, and resources for meeting NPR objectives. This should include a credible program plan for reestablishing all of the capabilities needed for production of currently deployed warheads.

Within the next 2 years, NNSA should implement new certification procedures that fully exploit the strengths of the national laboratories. Concurrently, there should be significant progress in reducing surveillance backlogs of critical items. Both NNSA and DOD should demonstrate test-readiness of 3 months to a year, depending on the kind of test. DOD should publish a funded program plan for weapons-effects phenomenology, simulation, and test readiness that should complete at least one cycle of a new annual assessment process in which there is enhanced rigor in DOD surveillance and assessment.

There remains an urgent need for NNSA to address the fundamental problems that Congress created it to correct. The startup phase is now over. If NNSA is unable to accomplish its tasks, Congress should take positive action to further strengthen the mandate and support needed to adequately manage the Nation's nuclear capabilities.

Mr. Chairman, it's been this panel's privilege to address this vital national security concern. I thank you for providing me with this opportunity to share the panel's views, and I welcome any questions that the members may have.

[The prepared statement of Dr. Foster follows:]

PREPARED STATEMENT OF JOHN S. FOSTER, JR., PANEL TO ASSESS THE RELIABILITY, SAFETY, AND SECURITY OF THE UNITED STATES NUCLEAR STOCKPILE

Mr. Chairman, Members of the Committee. In 1999, Congress established the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile.¹ My prepared statement represents the views of my fellow Panel members: Dr. Harold Agnew, Dr. Sydell Gold, Mr. Stephen Guidice, and Dr. James Schlesinger. The Panel observed the nuclear weapons program for three years. We issued our third, and final, report in March. In performing our assessments, the Panel has used as a benchmark the long-standing commitment of this, and previous, Presidents that sustaining confidence in U.S. nuclear deterrent capabilities is a supreme national interest. Our work has focused on the steps necessary to manage the weapons stockpile and its supporting program accordingly.

You have invited me to comment on issues related to the Nuclear Posture Review. The NPR addresses questions involving both technical and policy considerations that go beyond the scope of the Panel's charter. There are, nevertheless, several areas in common, and in those areas the Panel found the NPR to be quite constructive. Many of the programs and initiatives in the NPR address the Panel's concerns that the Nation needs to do better if we are to do the best we can to sustain confidence in the stockpile. My remarks today will cover those common areas. The Panel did not address issues relating to the size of the stockpile, either active or inactive. We did not assess the logic of the proposed new "triad" of strike capabilities, defensive capabilities, and infrastructure. Nor did the Panel examine specific requirements for new weapons.

MAJOR CHALLENGES REMAIN

I will begin with the context. The Panel and the NPR describe the current situation with the weapons program in much the same way: *The program is entering a very challenging new phase that will stress the Nation's ability to sustain the existing*

¹The 1999 Strom Thurmond National Defense Authorization Act created the Panel to review and assess (1) the annual process for certifying stockpile reliability and safety, (2) the long-term adequacy of that process, and (3) the adequacy of the criteria to be provided by the Department of Energy for evaluating its science-based Stockpile Stewardship Program.

stockpile. Weapons are aging. Some mainstay weapons, such as the W76 Trident warhead, are already reaching their 20-year design life. Several weapons are showing disturbing signs of deterioration and other problems. Owing to improvements in our assessment tools, we now are discovering that we had been overconfident in the past in assessing some of our existing weapons. The W87 ICBM warhead is being refurbished. Last year the decision was made that three more warhead types (the W76, the W80 cruise missile warhead, and the B61 bomb) will undergo extensive refurbishment in the coming decade.

Sustaining high confidence in these complex systems is an unprecedented technical challenge for the Department of Energy, the laboratories and the production complex. We will be introducing different components, new materials, and new production methods; making design changes to warheads; and utilizing a new generation of people, assessment tools, and refurbished facilities. *Under these difficult circumstances, I do not think that anyone should be surprised that the confidence in the nuclear stockpile, which is based on the nuclear-test "pedigree," is deteriorating.*

STEWARDSHIP MUST ADAPT

To sustain confidence in the face of these challenges requires a transformation of the weapons program. The necessary tasks ahead demand capable tools, people, and facilities—as well as the most rigorous available processes—for designing, assessing, certifying, manufacturing, and maintaining our nuclear warheads. The Panel outlined initiatives in six areas. Each of these areas was addressed to some degree in the NPR.

First, it is imperative that we strengthen stockpile surveillance, assessments, and certification. These processes are the day-to-day foundation for understanding stockpile safety and reliability. They also will be critical for judging our confidence in the warheads that will be refurbished over the next decade. As the technical challenge of maintaining the stockpile grows, these processes must be as rigorous and probing as the responsible stockpile stewards know how to make them. Decision makers need to be apprised of all the viable options for sustaining confidence. Key to this is sustaining the competition of ideas among the nuclear design laboratories. This has been a critical foundation for the weapons program for five decades, and it is the *raison d'être* for two such laboratories.

The Panel recommends that the Annual Certification Process entail the identification of issues that may undermine confidence, and an assessment of the relevant options for sustaining confidence—at each level of the assessment process (i.e., technical, operational military, and national). We also recommend broadening the scope of Annual Certification reporting to encompass issues concerning the full spectrum of capabilities necessary to sustain confidence. This would require significant changes to current practices affecting several executive branch activities, and the Panel believes national-level guidance is needed to shape the needed process. The Panel urges Congress to support our proposals for processes that would engage the laboratories, DOE, and DOD in obtaining an unvarnished and complete assessment of stewardship issues and options.

Second, the Administration and Congress need to articulate a balanced, forward-looking weapons program, and allocate resources to the highest priority deliverables. Such a program would meet requirements for weapons refurbishments, while at the same time would adequately support the exploration of advanced concepts and maintain leading capabilities in weapons-relevant science and technology. NNSA—the National Nuclear Security Administration—must provide the leadership, by creating a program that defines the essential deliverables and that clearly defines the resources allocated to provide these deliverables.

A renewed focus on deliverable products and delivery schedules is essential to drive the need for restoring the weapons complex, for training a new generation of stockpile stewards, and for addressing long-standing management deficiencies.

This Committee is well aware that other nations continue to maintain and adapt their nuclear arsenals, and that there is a continuing proliferation of weapons of mass destruction and their delivery methods. Technological surprise has occurred in the past and is something we must guard against. The work on future concepts and technologies is needed to assess intelligence information, to avoid technical surprises as well as to train stockpile stewards, and to provide alternative options for addressing any problems that may arise. The Panel also emphasizes that it is essential for Congress to be kept apprised of developments in foreign weapons programs and their potential implications for U.S. security.

Third, to sustain the nuclear stockpile we must restore an adequate weapons complex. Today, many capabilities are missing or deficient. *As you know, the United States is the only major nuclear power that is unable to manufacture the nuclear*

components for its nuclear weapons. Restoring these capabilities can take a decade, or more. In the meantime we run serious risks. A plan and program are needed to restore capabilities in the weapons complex, *and we need to get started now.*

The adequacy of the production complex is a critical factor in determining the appropriate size and state of readiness of the inactive reserve of weapons and the pace of dismantlements. If we had the necessary capacity to repair or produce weapons, the U.S. could relieve our dependence on an inactive reserve.

Fourth, test readiness needs to be addressed much more realistically. This is not because a need to test is imminent, but because prudence requires that every President have a realistic option to return to testing, should technical or strategic events make it necessary. Our current readiness to return to testing is two to three years. *The Panel recommends the Administration and Congress support test readiness of three months to a year, depending on the type of test.* The Panel recalls that when the Senate rendered its advice and consent to the START II Treaty in 1996, its Resolution of Ratification stated that the United States should maintain the Nevada Test Site at a level that would allow testing to resume within one year following a national decision to do so.²

Fifth, NNSA needs to provide the strong leadership Congress sought when it created that organization in 1999. NNSA inherited an extremely difficult situation when it was created in 1999. DOE experienced large budget cuts in the early 1990s, and was never able to establish a coherent long-range vision for the program that was consistent with the available resources. NNSA was created to address these challenges, and to rectify other long-standing DOE management weaknesses.

NNSA needs to establish clear lines of authority, responsibility, and accountability. Laboratory directors and plant managers should be tasked and enabled to meet the requirements, standards, timelines, and budgets established by the NNSA leadership. The Panel reviewed NNSA's recent report on its proposed new organizational structure. In principle, the proposed approach can be made to work. It is time now for decisions, communication, and disciplined implementation.

Sixth, while the Panel's focus has been mainly on the NNSA weapons program, we also considered the related nuclear program activities in DOD. Three specific actions are recommended: 1) strengthening the Defense Threat Reduction Agency's programs for understanding weapons effects; 2) creating in DOD a systematic annual assessment of its delivery platforms, command and control, and other systems needed to perform a nuclear mission, that parallels the process for the weapons stockpile; and 3) reassessing weapon requirements in view of the NPR.

EXPECTATIONS

The coming year will be critical in transforming the weapons program to meet the coming challenges. We should expect specific actions in several areas.

Within this fiscal year:

- NNSA should complete its reorganization, resolve organizational relationships with DOE headquarters, and develop a plan for reducing unnecessary administrative burdens. The Secretary of Energy should complete a review of DOE orders and directives, and remove all unnecessary duplication of staff.
- NNSA should clarify program management roles, responsibilities, and authorities.
- NNSA should create a future years program plan and a transparent budget defining deliverables, priorities, and resources for meeting NPR objectives, with a clear connection between resources and deliverables. This should include a credible program plan for reestablishing all of the capabilities needed for production of currently deployed warheads.

Within the next two years:

- NNSA should implement new certification processes that fully exploit the strengths of the weapons laboratories. Concurrently, there should be significant progress in reducing surveillance backlogs of critical items.
- Both NNSA and DOD should demonstrate test readiness of three months to a year, depending on the kind of test.
- DOD should publish and implement a funded program for weapon effects phenomenology, simulation, and test readiness, and should complete at least one

²Congressional Record—Senate. January 26, 1996, S461. Resolution of Ratification. Treaty with the Russian Federation on Further Reductions and Limitation of Strategic Offensive Arms (The START II Treaty). Paragraph (12), subparagraph (F).

cycle of a new annual assessment process in which there is enhanced rigor in surveillance and assessment of DOD assets.

There remains an urgent need for NNSA to address the fundamental problems that Congress created it to correct. The start-up phase is now over. If NNSA is unable to accomplish its tasks, Congress should take positive action to ensure that the nation's nuclear capabilities are adequately managed.

Mr. Chairman, it has been this Panel's privilege to address this vital national security concern. Thank you for providing me with this opportunity to share the Panel's views. I welcome your questions.

The CHAIRMAN. Thank you very much, doctor. I'm going to go to Admiral Owens now, and then if—I hope you are able to stay for questions. If you can't, we understand. We'll submit them to you in writing. But I'm fearful, after consulting with Mr. Lugar, that there may be a vote on the floor, and I want to give Admiral Owens a chance to get his full statement in before that happens, if it does occur.

**STATEMENT OF ADM. WILLIAM A. OWENS, U.S. NAVY (RET.),
FORMER VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF;
CO-CEO AND VICE CHAIRMAN, TELEDESIC LLC, BELLEVUE,
WA**

Admiral OWENS. Well, thank you, Senator. It's a great pleasure to be here with you and to be a co-panelist with a gentleman I admire very much, John Foster. I would ask that I not read the full statement. I'd like to give you 4 or 5 minutes of an overview, if I may, and leave time for discussion, if that's OK?

The CHAIRMAN. Without objection, your entire statement will be placed in the record.

Admiral OWENS. Thank you, sir.

I'd like to just comment that it's trite at this point in the history of our country to say that the world is a different place. And so, in light of the fact that there are so many dramatic changes around us in this world of terrorism and weapons, et cetera, it seems to me that the mandate is for change. And I wonder, if we look back on the year 2002 from the year 2012 or 2017, and we evaluate what has happened to us in the last 10 or 15 years, if we won't ask ourselves if we thought seriously and broadly enough about this whole range of nuclear weapons. And so I'd offer a few observations.

First—and these will be very brief—I see no real threat of large-scale nuclear attack against this Nation. Second, I think we're all well aware that there are literally thousands of nuclear weapons in Russia, not only the strategic ones, but the tactical ones, and they are dispersed in 40 facilities around the Russian countryside. Arguably, those 40 dispersed facilities are more or less secure, but one has to wonder if it is in our best interest to have large numbers of nuclear weapons stored in those facilities. In that regard, I couldn't offer stronger support for the cooperative threat reduction efforts of Senator Lugar and Senator Nunn. I think they're enormously important, and I hope that the beat goes on, in terms of supporting them.

Tactical nuclear weapons seem to be a marginal discussion. I can't imagine why. We read in the Washington Post and every other newspaper in this country about the strategic nuclear weapons reductions and going to 1,700 to 2,200 in the year 2012, but

where is the discussion of tactical nuclear weapons, the thousands that the Russians have versus the many hundreds that we have, and are they not important? My view would be that those are the most proliferable of nuclear weapons, and there should be a keen focus on those tactical nuclear weapons.

I think another area that is being only marginally addressed is the area of cruise missiles with nuclear weapons onboard. And surely that has to be of great concern. As we look at the next 9/11, is it not very probable that it could come in the form of cruise missiles readily available on the world market whether it has a nuclear weapon or otherwise onboard? We need to be looking at that capability. And, of course, national missile defense doesn't provide an answer for that problem. So those missiles with a nuclear weapon are clearly of great concern.

I would offer that many solutions are not timely enough, that as we look back 15 years from now we'll ask ourselves if we couldn't have done it faster. And so while I salute this administration for its efforts to reduce the nuclear weapons and bringing the treaty to this body for approval, and I think it's definitely a step in the right direction, I believe that it should happen much faster than 2012. And if there are ways that we can do it faster, we should try to find those ways.

I'm concerned about "dirty" nuclear weapons, and that's a big issue, as we all know. The simple weapon—conventional explosives, with very radioactive, contaminating material in it—is a great threat to this Nation as we look at terrorist attacks in the future.

And it's, for me, very difficult to see how we have a use for several thousand nuclear weapons, whether it's the 2,000 with a significant responsive force—I don't know what the possible use for those nuclear weapons is today or in the future for that number. Is it—I can't imagine, unless it is some fear of what happens in Russia. And so we must maintain a readiness to deal with that. But, at the same time, it seems to me, as a Nation, we should be leading, in terms of trying to reduce the number of weapons below the numbers that are presently on the table.

Likewise, I think it's very problematical about what the use is for the U.S.-NATO nuclear capability. It has been seen in years past as an element of melding NATO together. And yet today, I think it stands in the way of addressing directly the tactical nuclear weapons inventory on the Russian side. And so we hear very little discussion of the U.S. tactical nuclear capability in Europe, and I think it's very important.

And, finally, I question whether the use of nuclear weapons as an answer—as a deterrent for the use of biological and chemical weapons makes sense. Would we not want to be the ones who are leading the answer to deterrence against those kind of weapons with other kinds of responses, rather than suggesting that we would respond with a nuclear weapon as a direct capability of this Nation?

So I think we need real change. And let me just mention three or four areas of significant—I would call them "bigger-picture changes" that we might entail in this Nation that should be a part of the discussion. I'm certain these are not the right answers, but I'm also certain that we need to think about this much more broadly than we have in the past.

So, first of all, the issue of when changes could occur. Is it possible that we could look at a third-country storage area where we could put excess nuclear weapons from this country and from the Russian inventory in a very secure, monitored storage which the Russians and we monitored and was monitored by an international body of some sort? One could conjecture on where that might be, and it's probably wrong to say where it could be, but I think that it is possible, and that might allow us not to get to a lesser number of nuclear weapons a few years from now, but next year! And we should look seriously at permanent storage under the surveillance of trusted parties, including ourselves and the Russians, in another nation.

I think that we have an enormous capability in the world of the revolution of military affairs information-technology data links to be able to put an "American information umbrella" over suspect parts of the globe, be that the facilities in Iraq or the facilities in North Korea, and to monitor them 24 hours a day, real time, all weather—the unmanned aerial vehicles, Global Hawk/Predator, many airplanes, tactical sensors, all data linked, give us a capability to see the ground in many ways that I think many may not fully appreciate—and then to have a deterrence structure built around that information umbrella.

And it may have become time to think of the information umbrella as a serious part of our deterrence strategy as opposed to the nuclear umbrella. It applies to North Korea. It applies to Iraq. And it could apply to many other areas. You could easily see that if you had such an umbrella, there are many things we could say, in terms of diplomatic absolutes, to an offender, "Don't do x or we will do y ," that make enormous good sense to me and, I think, have had very little discussion.

I think we could find a way with the Russians to absolutely and transparently control what happens after we destroy a nuclear weapon. When it's destroyed, there is still material. It is weapons grade. In some instances it is diluted weapons grade, and there is a lot of waste material. And we need to be able to address those issues. That's not a part of the discussion today. We need to be able to address those kinds of issues in a transparent, accountable way, because they are very much subject to being proliferated.

I support strongly the Nunn-Lugar Threat Reduction Program, and we should fund it and fund it and fund it.

I think we should find a way to develop a very good business with the Russians for safe, secure, transparent, transportable capability for nuclear weapons and nuclear waste around the world. When it is transported, it is a huge problem that we're all aware of, political in every nation in this world. And we and the Russians own the technologies to allow the safe, secure, accountable transportation of all of those kinds of materials, and we should get on with finding a way to do that as a cooperative scheme with the Russians. We need to put a lot of focus on tactical nuclear weapons.

And that brings us to the issue of NATO. And we have to question seriously whether the new NATO, the expanded NATO, is best served by having a continued nuclear umbrella as a part of it, and yet the discussion there is not present.

Finally, the cruise-missile threat, I think it does need to be a part of these discussions.

And, in overview, I think this is a new world. Relevant new-world thinking needs to be brought to this whole area. And I know many of you are sponsoring much of that, and I salute you for that.

And it's been my privilege to talk to you here this morning.

[The prepared statement of Admiral Owens follows:]

PREPARED STATEMENT OF ADM. WILLIAM A. OWENS, U.S. NAVY (RET.), FORMER VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF; CO-CEO AND VICE CHAIRMAN, TELEDESIC LLC, BELLEVUE, WA

This testimony is primarily focused on the need for substantive CHANGE. Military institutions are by nature conservative, cautious of fads, and hesitant to rush headlong into change. Their conservatism is founded on experience, for they have learned, often very painfully, what can happen when they make the wrong changes and that they could be expected to deliver weapons while in the "midst of change." So, while the risks of being defeated in mankind's deadliest competition (WAR) drive militaries to innovate, those same risks inhibit accelerated change and rapid innovation. History suggests that there rarely are revolutions in the way we conduct national defense, and that is even more true in the matters of nuclear weapons, their doctrine, and the theory of use. It has now been over a decade since the demise of the bipolar world, for which we built our nuclear forces. Our hesitation to boldly change stems from many factors. But, I propose that in the face of a vastly different set of world conditions, we must change significantly, and we must include in that change the entire area of nuclear forces and deterrence.

There has been considerable discussion about the Nuclear Posture Review, about Strategic Nuclear weapons reductions, about the ABM treaty and how it has been handled, about the Non-Proliferation Treaty, the Comprehensive Test Ban Treaty, the National Missile Defense capability, and about the demise of the Russian nuclear capability. I want to try to stay away from too much of the detail of these very important subjects and try to provide some context for discussion (or argument), for it's my belief that unlike the normal approach to military planning, e.g. be very cautious or we might break something, the most negative approach we could now take would be to NOT undertake significant change. First a set of observations:

- There is no real threat of large scale nuclear attack from any country (unless there was a complete failure of government and a very unstable leadership developed in Russia).
- There are literally thousands of nuclear weapons (strategic and tactical) in about 40 dispersed facilities in Russia, which arguably over the last decade have had questionable security. The officers overseeing them are often poorly paid, living in remote areas, and poorly equipped with available modern security capabilities. There have been occasional reports of hunger strikes at a few of these facilities.
- Tactical nuclear weapons numbering in the "*several thousands*" for the Russians vs. "many hundreds" for the U.S. are generally UNADDRESSED, or at least only marginally noted, in most of the current rhetoric, treaties, and discussions. Note: These weapons are not too different in destructive power from those used in Hiroshima and Nagasaki. These, arguably are the weapons over which the Russians have had less control in terms of inventories, security procedures, etc.
- Cruise missiles with nuclear warheads are also in the "marginally addressed" category. These weapons are considerably easier to build, much more accurate, and much less visible to intelligence sources. They also are not addressed by our National Missile Defense initiative, except in footnotes. They could be the essence of a future 9/11 attack, but think about a dozen or so of them precisely targeted on particular places; the West Wing, the Speaker's office, several industry leaders, etc.
- Many "solutions" are not timely, envisioned to take place not over months, but over many years, and in some cases the "cow has been out of the barn" for a decade.
- America is unquestionably unapproachable in nuclear weapons capability, not only for the present, but as best as most of us can see, for many decades. In this regard, our reputation in the world and the future of nuclear weapons will depend upon how we "handle ourselves," what we do, what we say, what our budget funds, and how we deal with other world powers. Article VI of the NPT obligated each Party "to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament." We must be careful that our actions do not cause others to doubt our sincerity and to

take actions that would spur on either an unhealthy arms race or worse in generations ahead lead to the availability of capability which others could use to threaten our Country.

- “Dirty Nuclear Weapons” are little addressed in terms of substantive policy direction or initiatives. There is considerable evidence that non-weapons grade materials are available and well known to terrorist organizations. There has been reference to an incident of Cesium-137/Strontium 90 use in a Moscow park in 1995. General Dudayev, the former head of the Chechen Independence movement noted that this was only a “scant portion of the radioactive substances which we have at our disposal.”

- It’s very difficult to imagine what possible use we could have for several thousand offensive nuclear weapons. If our new relationship with Russia is indeed built on a new trust (like that we have with France or Great Britain?), and if we are indeed not to target them, it is hard to imagine what “requirement” we have for the present number of strategic nuclear weapons in our arsenal or the planned numbers for the future, including the fully diluted year 2012 number of 2000 operational nuclear weapons, let alone the “response force” of several thousand more. We should remember that this capability costs this nation significant taxpayer dollars, dollars which might go to some of the threats mentioned above or to other important national defense priorities. Even more importantly, the perception of our Country as not being sincere about reducing the viability of nuclear weapons and fostering a continuing arms race is damaging.

- In light of the above it is also difficult to ascertain the purpose of the U.S.-led NATO/European nuclear capability.

- If there is a perceived use of nuclear weapons for deterring the use of chemical or biological weapons, it would appear to be weak at best. We have a very convincing conventional force which is likely to be a much more effective deterrent, and we do have an ability to use it pre-emptively when we know that such a capability is being developed. Are we not better to take a position against the use of nuclear weapons for such deterrence. . . . “Use Chemical or Biological weapons against us or our allies, and your life will not be the same. We have the ability to eliminate those who would use or sponsor such a use, and we do NOT need to use nuclear weapons!”

So, *could I give you some thoughts on big ideas?* Let me suggest just a few for consideration:

- First, There is a real issue with WHEN changes occur. Could we and the Russians reach agreement to *put large numbers of excess strategic and tactical nuclear weapons in third country “permanent storage” under the surveillance of “trusted parties,”* in which complete transparency and security of the weapons is maintained? Such a plan could be implemented in months vs. years, and could be the basis for true downsizing without the threat of loss of control of the weapons in the ensuing years. It could also include OTHER nations and be the basis for real confidence in general global downsizing.

- Second, we could *develop Information Umbrella(s) which could be used to provide information to support nuclear deterrence,* perhaps information about precisely what is happening in Iraq around the CBW facilities?, or in North Korea around the missile facilities?, or in Iran around suspected nuclear development sites? Or ?? Such information umbrellas would be developed from sensors on satellites, unmanned aerial vehicles, and a number of other aircraft in our present inventory. All information could readily be “fused” to provide a 24 hour a day, real-time, all weather accurate picture of the entire area (country?). We could readily put 5 or 6 of these in place around the world positioned optimally to give America the best strategic picture of crisis areas. And could we develop deterrent strategies using that information, e.g. “don’t do . . . or we will . . . (such message for public or private delivery). Is this a more effective plan than the Nuclear Umbrella which we have provided for our NATO or Japanese or Korean allies?

- Third, with the Russians we could find ways to *absolutely and transparently account for and control (1) the nuclear materials which remain after the destruction of nuclear weapons, and (2) nuclear waste* which results from commercial or military nuclear plants as well as other nuclear residue (remembering the dirty nuclear weapon threat).

- Fourth, continue with a *much more aggressive Nunn-Lugar Cooperative Threat Reduction program* with a focus on both strategic and tactical nuclear weapons. It might be the best money we spend to help the Russians destroy their nuclear arsenals. How much is too much to spend on such an important program?

- Fifth, develop U.S./Russian cooperative programs which could make money for cooperating businesses from both countries which allow for *transparent, safe, constantly monitored (modern communications/GPS/etc.), accountable, and secure global transportation of both weapons grade and diluted weapons grade nuclear materials, as well as nuclear waste*. Note that the U.S. has purchased 500 MT of “blended-down” nuclear weapons grade materials for use in our commercial nuclear power plants. This is big and very important business and could be critical for the absolute control of these nuclear materials. There is a potential market of a few billion dollars of revenue in this business, and there is no focus for the activity today. As a matter of policy and implementation we should proceed with this kind of initiative now.

- Sixth, put some *focus on tactical nuclear weapons* where we are faced with thousands of Russian weapons (as compared to a few hundred for us). And the Russian weapons are arguably controlled far less rigorously than their strategic weapons. This would require a focus on our nuclear policy as it relates to NATO. NATO and the bilateral security treaties we maintained during the Cold War had a sublime logic based on mutual utility. They reconciled our desires to gain both tangible and political support from our allies, with our allies’ desires to influence and control the views, and, more importantly, the actions of the United States, the superpower with which they were allied. NATO and our alliance with Japan offset the Soviet military threat. But it also provided an internal balance in the face of the profound military-technical disparity represented by our nuclear weapons. Germany and Japan, and for a while France, agreed to forego developing nuclear weapons in exchange for an American nuclear umbrella. We promised, in turn, to deter Soviet military action by the threat of nuclear escalation and backed our promise by forward stationing American forces on the territory of our allies. Our allies, in exchange, acquiesced to American alliance leadership. We, in exchange, agreed to procedural and institutional constraints on our freedom to act unilaterally. NATO and our alliance with Japan deterred a common threat. But equally important, they assured a mutually beneficial balance among the members, a balance that was greatly unbalanced in terms of their military power and ours. But Europe and the Russian threat has changed. Arguably the threat of Russian tactical nuclear weapons is much more important than is the possession of a small NATO nuclear force. That nuclear force hardly melds the alliance in this new world, and it is very likely that the security of Europe would be greatly enhanced if both we and the Russians eliminated all tactical nuclear weapons. A good case could be made that a U.S./NATO Information Umbrella mentioned above could be an important element of a replacement strategy. The key, of course, would be our willingness to share the U.S. information edge. This would mean opening access to our national technical capabilities wider than we have been willing to do in the past and sharing the fruit of those and our other capabilities more broadly than we have done before. But like the nuclear umbrella before it, a U.S. “information” umbrella could reinforce a mutually beneficial relationship between the United States and our allies.

- Seven, *address the cruise missile threat*. If there is a plausible pseudo-military threat to our Country it is this one. These missiles are inexpensive, accurate, fly several hundred kilometers, are relatively easy to acquire, and can deliver nuclear, chemical or biological weapons. The ability to put together “systems of systems” (space, air, and ground sensors, computer networks, and bandwidth communications) to address this critical threat would be of vast benefit to the protection of our Country and our allies. It needs dedicated focus and considerable funding.

It is my conclusion that original *new-world-relevant thinking is more necessary now than it has ever been*. There will be many better ideas than those addressed above. But it seems that there is a mandate to truly change in a World which is truly changed.

The CHAIRMAN. Thank you very much, Admiral Owens. We are—doctor?

Dr. FOSTER. Mr. Chairman, I apologize very much to this committee, but I must leave at this moment. I wanted very much to be able to take your questions while I’m here, but I can’t. And I look forward to any questions you would—

The CHAIRMAN. We’ll submit them in writing. As you’re getting up to leave, I’ll ask you one—I thought you were nodding in agreement with the first several recommendations of Admiral Owens. Was I correct?

Dr. FOSTER. Yes, I agree with many of the points he made.

The CHAIRMAN. I thank you, and you are excused. And with your permission, we will submit some questions to you.

Dr. FOSTER. Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you for being here, and I apologize for starting late.

Admiral, I don't want to ruin your reputation, but your testimony is music to my ears and I think to many here.

Now, that may hurt you. I am not at all certain. But if Senator—I noticed Senator Lugar nodding, as well, so that may help you, and I suspect Senator Hagel shares some of the same admiration for what you've had to say.

If you will allow us, it would be—we all three have a keen, keen interest in what you had to say. And rather than do what we usually do, is one of us leave and go vote and the others come, all three of us are very much interested. Would you indulge us, and we'll recess for 10 minutes, run over and vote and come back, because—

Admiral OWENS. Sure, Senator.

The CHAIRMAN [continuing]. We very much want to speak to you. OK?

Admiral OWENS. Thank you.

The CHAIRMAN. Thank you. We'll recess for 10 minutes.

[Recess.]

The CHAIRMAN. The hearing will come to order. Since Senator Lugar got back here first, why don't you begin with the questions?

Senator LUGAR. Well, thank you very much, Mr. Chairman.

Admiral Owens, the suggestions that you have made and that the chairman has already commented on received many assenting nods and I think they are a good collection of suggestions from which to proceed. I want to ask about two or three of them.

First of all, you talked about the transparency through monitoring from satellites from—in a real-time situation. Could you provide more detail on your views on how this might work.

Let us say, for example, that our government had a list of countries with weapons-of-mass-destruction and associated laboratories and materials. As I understand your proposal, we would do our best, through national tactical means, rather intelligence means, to divine where these places are and what they are doing. Ideally, we would have cooperation with Russia in that respect and maybe other countries, who, in the same spirit of the current war effort, are sharing intelligence, because this is the heart of the matter with regard to success in the war against terrorism.

So let us say we get this cooperation. How would we accomplish this task? Can you actually launch enough satellites to maintain real-time imagery in a way that, as you've suggested, the whole world monitors what is going on, and can detect telltale signs that could lead to action based upon the evidence that is produced.

Admiral OWENS. Right, Senator. Well, I think it is at the crux of the issue on the information umbrella. It is really in this Nation's capability today to do much more with information technology than we do in DOD and in our other agencies. The information umbrella, I think, can be constructed of existing technology. It's not a future kind of thing, but it is a different cultural kind

of thing. It is to lead with our information strength—not to lead with ships and tanks and airplanes, but to lead with information technology. And I think what that means is, yes, there are satellites, and, of course, they are orbiting and passing, and so you don't get continuous information, but we do have these remarkable new technical capabilities of unmanned aerial vehicles, the Global Hawk, at 70,000 feet above an area, pretty much out of the range of most surface-to-air missile systems and, if used wisely, can be kept outside of the range of missile systems. We have Predators, and we have long-range systems that have the ability to detect moving targets on the ground with what we call "MTI sensors."

If you put these various sensors together—and we have companies in the commercial marketplace in this country that can do that readily with new software—Java, C++—tying together data links and sensor links, and then being able to deliver the 24-hour-a-day, real-time, all-weather picture of a large area. A hundred-mile diameter I think is very doable. And if you knew four or five places in the world that were suspect—maybe it's Pyongyang, North Korea; maybe it is Iraq, and we know pretty much, I think, where those facilities might be—then we could lead with the information umbrella, establish with our friends and allies in the region that this is meant to be a deterrent position, and deliver demarches to the Iraqis to the extent—or the North Koreans or whoever the suspect country is—that, "Here is a list of things you may not do. You may not move vehicles from one facility to another. You may not have people going in or out of that facility. And the answer to your getting this new kind of sanctions lifted is to allow full-time inspectors on the ground."

I think much of that could be dealt with either quietly, in diplomatic circles, or openly. We have the technical ability to do this in several areas around the world. It is our great strength, this information technology, and I think this is the kind of thing that might make for real deterrence for someone who is considering doing some bad things with weapons of mass destruction.

The CHAIRMAN. Does the Senator mind if I intervened? I think you're dead right. It's one of those ideas that seems to be so self-evident that it would make sense to do it—I always wonder why we don't. But you indicated the need for surveillance systems that are out of the range of surface-to-air missiles. It would seem to me that that wouldn't matter, that obviously, if someone uses a surface-to-air, by definition, there is a problem, and we should be able to build that in.

Admiral OWENS. Senator, I agree. There is this issue that—with the advent of unmanned aerial vehicles and, therefore, the ability to preclude loss of life when one of them is shot down, that as soon as someone shoots at one, you know from whence the missile came, and you can put a missile quickly onto that spot, and at least that missile site won't shoot down the next unmanned aerial vehicle. So I think there are some very interesting deterrent policies that can be built around that kind of capability.

The CHAIRMAN. Excuse me for interrupting.

Senator LUGAR. No, that's all right. But let me carry this further. Now, this is not hypothetical, because we're in a war against terrorism, and a good number of us have suggested that this means

seriously making certain that every area that has weapons of mass destruction or materials is secure. Now, we would ask, for example, of our friends in Pakistan and India to make certain that—whatever they have, that it's secure. It is imperative as far as we're concerned, and the rest of the world, that these weapons do not fall into the wrong hands.

Now, at some point, we may run into somebody who seriously objects to this—perhaps the Iraqis, who would say, "Well, it's none of your business." Now, at this point, it's been proposed by some that we would ultimately get into a military conflict over the access to their suspected WMD sites. If what you're saying follows through—for example, you issue demarches. You say, "You cannot run a truck up to the plant, or people cannot come and go." Well, let's say the Iraqi leader says, "Let's test the system." And so, in fact, two trucks drive up. Now, at this point, there is a big difference, obviously, between an all-out war against Iraq and what might be called a "surgical strike" in which the two trucks are eliminated. In other words, to follow this through, you have maybe a different kind of tactic for a successful war against weapons of mass destruction, proliferation, interdiction of all of this.

Am I moving well beyond the curve of the doable? You start with diplomacy, but the information may also lead to military action, and it could be very specific. In the same way that, in Afghanistan, we tried very hard to have no collateral damage through precision guided munitions and command, control, and communication capabilities combining ground, air, and naval forces. And is this doable as we get into this larger situation of multiple nations and many threats of proliferation?

Admiral OWENS. Well, Senator, I think you raise a number of interesting points. I do believe that—and when I was the Vice Chairman, I did a number of studies inside the JROC environment and the joint warfare capability assessments that, with the fusion of these many sensors, you really can see very, very clearly with very high resolution the area that you are looking at. Probably some of those technologies we shouldn't talk about in open hearing, but there is a great capability to integrate SIGINT and HUMINT and IMINT, imagery intelligence, and MASINT, the sum of all of the INTs, if you will, into a fused picture of that area.

We do have the ability to do that, but we don't do it for some reason, because one platform belongs to one agency or service and another one belongs to another, and the data links don't work together, and the COM structure doesn't work together. So, for some reason, we haven't quite gotten to the stage where we could do it, but that's not because of lack of technology, it's because of the culture in which we live.

Now, if we saw information technology as truly being our great strength, then I think we have the ability to do the kinds of things that you suggest. And we have also the great precision and flexibility to tune the policy to the situation. If, in fact, Saddam Hussein started to drive trucks with women and children down the road, we may find a way to deal with this that isn't to target every truck, but you could make it very public that we are going to do this, and then if he does it, it is he who is responsible, not we.

So I just think that there is an enormous capability here, in our country and no other country, that we should take advantage of strategically. And, you know, if we're worried about the North Koreans launching a ballistic missile, then we should have this kind of information umbrella over that launch erector. And when they erect, that would be the one thing we say, "Do not take a missile to the launch pad, and do not erect." And——

The CHAIRMAN. And if you do——

Admiral OWENS [continuing]. If you do, then we will A, B, and C. And, of course, we have an ability with a range of precision weapons to be able to respond quickly. I think of the Army ATACMS as a great weapon for putting together with the information umbrella. As you know, it's the only conventional ballistic missile, like the Scud, in the American inventory; except, for us, it works. And it goes very quickly, because it's ballistic. It gets there in a matter of one fifth or less the time that a cruise missile or an airplane would take. And so you can respond very precisely and very quickly to things that are happening that America doesn't want to see happen.

And I think you could build a real coalition among our allies around such concepts, where it's doing good for the right reasons. So I believe it's technically possible. I think it's very, very much doable.

Senator LUGAR. Mr. Chairman, I'll not belabor this issue, but I would just say that both of us have shared, throughout the past few months, both anxiety and exasperation as we've tried to examine why the agencies of our government couldn't track the money or actions of terrorists. And again and again, you run through all the jurisdictional hassles, the computers that don't work, the people who don't cooperate.

These are tough tasks institutionally. Our government really wasn't organized to handle these threats. But nevertheless, intelligent Americans have got to try to get over these barriers and put these things together, because an awful lot depends upon it. And I just appreciate your taking this time, first, to raise the issue and then, second, in a very concise way, from your expertise, to say that it's doable. And our problem is, I suppose, to spur on our leaders to do it and to keep raising those questions and trying to have that platform.

Mr. Chairman, as just an exit question—and it's really more than that—but I'd just simply note that Admiral Owens mentioned again the problem of the tactical missiles. And the fact is that the Russians have never really wanted to engage in talking about tactical missiles. It's a subject that, as soon it comes up, it moves away.

On the other hand, whether they want to or not, I'm just want to ask the witness, from his own experience, and maybe you've found some Russians to be more forthcoming. If not, how do we really get into this in a big way? Because otherwise, as you say, we've dealt with the large-missile warhead predicament, but the thousands of tactical weapons, many in Russia, at least as I understand their point of view, are a substitute for that. The maintenance of the old stuff and the big stuff is costly, even dangerous. As maintenance declines, then an accident might happen. Whereas,

the tactical weapons are perceived as something else, that, as you downsize ambitions and downsize your program, you maybe downsize the size of the weapon. And that sort of fits the scope.

Do you have any comment as to what the steps are to proceed to get more activity there?

Admiral OWENS. Yes, sir. Well, I think that, you know, that roles have shifted after the end of the cold war, with now the Russian military being conventionally inferior to what the NATO armies would be. It used to feel the other way around. And so we and our NATO allies thought it was very important to have tactical nuclear weapons to offset the conventional strength of the Russian military—the Soviet military.

Today, it feels the other way to the Russians. And I suspect they're holding onto the tactical nuclear weapons as a hedge against our conventional strength. But as we move, as the administration seems to be, to a new kind of relationship with the Russians, both in the nuclear world, as well as the conventional world, and we start, I hope, to see the Russians more like England and France than like the old Soviet enemy, then we should have very much on the table this issue of tactical nuclear weapons, as you said, and really get to the core of getting rid of them if we can.

A part of that is our own problem, I think, which is that many policymakers in our country believe that the NATO nuclear force is critical to holding NATO together and to having a genuine capability—against what, I'm not sure, unless it's the Russians. But then again, we're together with the Russians. And now we have the new agreement with the Russians to actually be much more present with us in NATO.

So in that regard, it just seems to me that we should find a way that we, ourselves, come to grips with the fact that NATO does not need a nuclear force, a nuclear umbrella. An American umbrella of some kind that is used to protect Europe—against what, again, I would ask. And that should be step one in leading us to a decision that we should undertake serious, serious dialog with the Russians to go to zero on tactical nuclear weapons and dramatically affect the business of proliferation.

And again, this brings us back, then, when you go to zero, and while we're getting more Nunn-Lugar money to help us truly destroy the weapons, what do we do with them? And I would find a place to store them under U.S.-Russian-international control—where there is transparency and security—while we're getting ready to destroy them.

Senator LUGAR. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Admiral, you're doing today what you did when you were at the Pentagon, and that is you're forcing people to think a little out of the box here.

One of my great disappointments after 30 years in this committee is we all used to use the phrase you used earlier—I can't remember exactly what you said—but "it's trite to say"—I think you were referring to "this is a new world." It really is drastically different, but I don't think, including the Nuclear Posture Review, that we've really—there's any really fundamentally new thinking. And the thinking that's taking place, it concerns me it's going in the opposite direction that we should be thinking about.

Let me explain what I mean by that, and I'm going to ask you to comment on this. With regard to the notion of having 24-hour eyes watching suspect sites in countries, you've testified, and others have privately briefed me, that that's fully within our capability. It costs a lot of money. It's fully within our capability to do that. And yet we're talking about dealing with those suspect sites as the rationale for spending a minimum of a hundred billion. And if it's a layered system, it could be a trillion, depending on what they mean by "layered," for a national missile defense. When, in fact, the ultimate national missile defense is taking it out before it's fired. I mean, it seems to me that's the ultimate national missile defense.

Second, it doesn't require a nuclear weapon to take it out—"it," whatever "it" is—before "it" is fired. And yet we seem to be moving in a direction—and this crosses party lines—where the answer to the emerging threat is another incredibly cumbersome and expensive and highly technical system that has incredible limitations once you get beyond ballistic missiles. As you said, cruise missiles sitting off the shore is—I mean, any missile defense is absolutely useless to deal with that—I mean, national missile defenses.

At the same time, the thing that concerns me about the—even though there's not much that's fundamentally new in the NPR—is it seems to—in another—to steal a phrase from a totally different context, teaching constitutional law—it seems to "squint toward" nuclear testing and new nuclear weapons.

So it seems what we're doing is—we have two gigantic advantages relative to the rest of the world. One is our conventional capability—gigantic advantage. I can't think of any time in American history where, relative to any other single nation or combination of nations, our conventional capability was as disparately disproportionate, in terms of capability. And, second, our technology capability to look and see what's going on.

And we seem to be taking those two gigantic advantages and cashing them in, in a sense, or not cashing them in, for two areas that are our biggest disadvantage, although we have a great advantage, in relative terms. Why the hell would we want to have a conflict on the nuclear side of the equation and encourage nations to conclude they had to beef up that capability or acquire it, when, in fact, that could do us, notwithstanding our superiority on the nuclear side of the equation, great damage; whereas, if we, in effect, were to downplay or foreswear—"foreswear" is too strong a word—move in the opposite direction of making it much more difficult for anyone to acquire, either by justifying their actions relative to ours or by us and the rest of the world allowing them to gain that capacity, we yield an advantage. I mean, I don't understand what—and I realize this is—I'm talking in broad trends, but am I missing something here?

Am I missing something about the trend that seems to be continuing, which is—and it's not just this administration; the last administration never got off this wicket, either—of we've got to figure out better tactical nuclear weapons, earth-penetrating nuclear weapons, weapons that have a different capacity, intercept capability in, you know, mid-course, possibly weaponizing space, et cetera, when, in fact, it seems the answer lies in our incredible ex-

isting advantages in the two areas where no one's realistically going to be able to compete with us in the near term. I'm not being facetious when I say—am I missing something here?

Admiral OWENS. Well, Senator, that's a big question, and—

The CHAIRMAN. I'm probably—I'm missing a lot, I'm sure, but, I mean, in terms of these broad strokes, am I right about the direction we seem to be going, relative to the direction we should be going?

Admiral OWENS. You know, sir, our culture doesn't allow us to be very radical in the way we change. We seem to have been built around the force that was designed, in an organizational and cultural sense, by Napoleon, and we have a lot of difficulty getting away from that.

When you start from that and say it's not a matter of the technology or the capability or what smart people would do, it's a matter of things like the Army-Navy game or West Point or Annapolis, wonderful institutions, and should we put naval people into West Point for a year, and West Pointers into Annapolis for a year. And the answer to that is always, "Absolutely not." I can't imagine why the answer is "absolutely not," but it's the same answer that causes your frustration with this issue, because it's culture. It is the Army-Navy game, and we all love the Army-Navy game and the culture of it and the battle between services.

But it's also true that when I became a commander, at 20 years in the service, I knew nothing about the Army, and I knew navies around the world much better personally and professionally than I knew the American Army. And so that kind of culture doesn't help us with the quandary that you have articulated.

I think that we do have an ability to change radically, and we must, as you said, because the world has changed. I agree with you. I think that it doesn't cost a lot of money to put in place these new technologies of information umbrellas if we were able to simply take all of technologies we have today and put them together. It's not—this is not multi-billion-dollar kind of stuff, I think.

The national missile defense issue, I am sympathetic with your position. We need to do a lot of testing and a lot of R&D. The deployment of these national systems, I think, is problematic. It takes a long time. It's questionable technology. But the regional technology, to strike in the boost phase or, as we talked before, with an information umbrella, to put a conventional weapon precisely on that spot, is not Flash Gordon stuff, and it needs to be very much part of our arsenal.

So I'm very much in agreement with you on most of your points. I do think that Secretary Rumsfeld has been trying very hard to institute real transformation and change, but there is a great resistance inside the system. There are bureaucracies two or three levels down that preclude this kind of movement. And you've know them better than I. But whatever we need now, it's leadership from the top to really make for substantive change in these areas.

The CHAIRMAN. Well, let me ask two specific questions. In my experience, and especially in the last 3 or 4 years, dealing with, meeting with, heads of state, Foreign Ministers, Defense Ministers, one of the things that I've concluded is—part of our dilemma internationally is I don't ever recall our allies questioning our motives

as often as occurs now. And in my estimation, one of the ways to deal with that is to, in effect, use it in a different context, have more transparency, in that being able to make the case to our allies why we're taking the action that we're taking and why we're suggesting the action we're suggesting.

And on the issue of being able to unify our intelligence capability in a way that would be able to give us real-time observation, I'm of the view that that would be greeted with an overwhelming positive response, particularly by our allies and many others, and it would have an ancillary impact, which is that it would fundamentally impact on their view of our motivation and hegemony and all the things that they second guess about our various actions or our assertions.

Now, I am not so naive, as having done this this long, to think that this would be easy to do. But as I understand what you're suggesting, in terms of the intelligence capability that you're talking about unifying, is that this would be something that would be open and shared with other nations, as opposed to us having these "eyes in the sky," if you will, intersected with all other INTEL that we have and then us, after the fact, sharing this information. It would be nice——

At any rate, what is your assessment of the likelihood of other nations greeting positively this notion were we to embark on such an effort?

Admiral OWENS. Well, Senator, I think that most nations, as you said, are looking for transparency. They want to do the right things. They want to stand by our side. And often the issue is whether they know as much as we know.

They do have some capabilities in these areas, both satellite and other sensors. They could be a part of this, or not, and we share the information. But I am grandly in favor of sharing much more information with our friends. We can be very selective about the kinds of things that we can share without giving up critical national capabilities. But we're out there around the world today with the British and the Australians and the Canadians, and they are as though we are one force. And the more we can be open with them, in my view, the better off we're going to be.

It's not unusual, in some instances, to find your wing man being from one of those very close allied countries. And if your son is flying in that airplane, you want to make sure that the wing man has every bit of technology that he can have to work with us. And so I think that transparency of information is very important, and it adds a lot to our credibility in this world.

I might also add that, you know, the world of commercial telecoms and IT makes this all easier to share. We've all worried about how we're getting in front of our allies, how they are falling behind. But, indeed, much of this is moving toward a Web-based TCP, IP, high-bandwidth, commercial technology, T1 kind of—all these new terms—world in which we can tie ourselves together with new kinds of integrating software that weren't there 5 years ago, some of the Java, the VB, the C++ kinds of software that allow us to tie legacy systems together, and that means tie our systems together with our allies in ways we never thought possible. So there are ways we can do some very interesting things using the

commercial technologies that are at the heart of this Nation's great strength right now responsible for much of the productivity of our Nation and could be responsible for the productivity of our foreign policy and for our military capability, as well.

The CHAIRMAN. Well, Admiral, I have so many more questions, as I'm sure Senator Lugar does. I'd like to ask your permission if we could submit several to you in writing and ask whether you'd be willing to come, either in a public or in a private setting, to discuss some of these ideas with us further.

Admiral OWENS. It's a pleasure, Senator. Thank you very much for having me here today.

The CHAIRMAN. I particularly am going to submit some questions relative to what I refer to as the "China factor," in terms of our U.S. strategic posture, if I may, but that would take us onto another half hour, I'm afraid. So, Admiral, thank you very, very much. Again, it's been illuminating and encouraging.

Admiral OWENS. Thank you, sir.

The CHAIRMAN. Our next panel will begin with a most distinguished scientist, Professor Steven Weinberg, of the University of Texas. In 1979, Professor Weinberg won the Nobel Prize in Physics. Throughout his career, Professor Weinberg has combined cutting-edge work with an ability to explain modern science to the rest of us. His books, "The First Three Minutes" and "Dreams of a Final Theory," have been bestsellers, at least by standards applied to works on physics and big galaxies and tiny particles. Professor Weinberg has also dealt before with the military and political policy implications of modern physics. And he's a former member of JASON, and he was a one-time consultant with the Arms Control and Disarmament Agency.

Our second witness in the second panel will be Dr. Loren Thompson, chief operating officer of the Lexington Institute. Dr. Thompson wrote an interesting piece recently in the Wall Street Journal in which he argued essentially—I hope I'm characterizing it correctly—that critics in the Nuclear Posture Review should basically calm down, because all the proposals in it were really aimed at buttressing nuclear deterrence. And I'm looking forward to being reassured.

And our final witness has come back again and again for us, Joe Cirincione, director of the Nonproliferation Project at the Carnegie Endowment for International Peace. He's a man of many talents who's been a frequent witness before this committee, and he was once a staff member of the House Armed Services Committee. He really specializes in the nexus between military and foreign policy, and we will count on him to draw together many of the points of view that will be expressed this morning.

And so can we begin in the order that you've been called? And, Dr. Weinberg, it's an honor and privilege to have you here.

STATEMENT OF STEVEN WEINBERG, PH.D., WINNER OF THE NOBEL PRIZE IN PHYSICS (1979), PROFESSOR OF PHYSICS, UNIVERSITY OF TEXAS, AUSTIN, TX

Dr. WEINBERG. Thank you, Chairman Biden and Senator Lugar. Thank you for giving me the opportunity to comment on some of the issues raised by the Nuclear Posture Review.

In the review, the Bush administration announces plans to reduce the number of operationally deployed nuclear weapons from the roughly 6,000 figure we have today to between 1,700 and 2,200 in about 10 years from now. But this number, even after this reduction, would be still vastly more than could be used in retaliation for any other country's use of weapons of mass destruction. And, furthermore, the administration plans to retain about 7,000 intact weapons in various reserves, overhaul and so on. And this is about half the rate of reduction of our nuclear weapons arsenal that would have been called for by the START II and START III agreements. I would say that this isn't liquidating the legacy of the cold war, but desperately hanging onto it.

There was a rationale for maintaining a very large nuclear arsenal during the cold war. We had to be sure that the Soviets would be deterred from any sort of surprise attack on the United States by the certainty that enough of our arsenal would survive to allow us to deliver a devastating response. And that rationale is now obsolete.

There is, however, another possible use of a large nuclear arsenal, which is not entirely obsolete, and that is to launch a preemptive attack against Russian strategic weapons. I say Russia here, because the large size of our arsenal would be irrelevant for a preemptive attack against any other power. But, on the other hand, even if we were unable to neutralize the Soviet deterrent during the cold war, now, as the Russian nuclear forces become increasingly immobile, with their missile-launching submarines tied up at docks and their mobile land-based missiles in fixed garrisons, our nuclear arsenal is large enough to put Russian nuclear forces at risk to a preemptive U.S. first strike. Now, I'm not saying we would do that, but one has to think about the implications of this.

It might be thought that the ability to launch a preemptive strike against Russia's strategic nuclear force is a pretty good one to have. But, in fact, it poses enormous dangers, and to us as well as to Russia. The Russians can count missiles as well as we, and as "prudent" defense planners, they're likely to rate our chances of a successful preemptive attack more highly than we would. I'm not worried about them getting angry with us or breaking off relations with us. I'm worried about what they may do. The cheap and easy thing for them to do is to keep their forces on a hair-trigger alert, posing the danger to the United States of a massive Russian attack by mistake. This danger will be further increased if the United States proceeds with a national missile defense that might be perceived, and I think would be perceived, by the Russians to have some capability against a ragged Russian second strike, or, if we follow the recommendation of the Nuclear Posture Review that the United States should develop real-time intelligence capabilities of a sort that would allow us to target even mobile Russian missiles on the road.

Even though this threat of a large Russian mistaken attack caused by their high state of alert is not an acute one, it's chronic. It's with us all the time, and it's also the only threat we face that could destroy our country beyond our ability to recover. I don't agree that terrorism is now the greatest threat we face. The threat of a Russian mistaken attack is a threat we face year in and year

out. It's the only one that can destroy us, and it's the one that gives me cold sweats when I wake up in the middle of the night.

This brings me to the one real value our large nuclear arsenal has. We can trade away most of our arsenal for corresponding cuts in Russian forces, and this is what we should be doing. And I don't mean cuts to about 2,000 deployed weapons with 7,000 in various reserves, but as a first step to not more than 1,000 nuclear weapons of all sorts, including those in various reserves, as was called for by a 1997 report of the National Academy of Sciences. In this way, the danger of a mistaken Russian launch wouldn't be eliminated, but the stakes might be millions or tens of millions of lives rather than hundreds of millions of lives.

It would also greatly reduce the danger of diversion of Russian nuclear weapons or weapons material to criminals or terrorists. We shouldn't be seeking the maximum future flexibility for both sides in strategic agreements we make with the Russians. We should be seeking the greatest possible irreversibility and transparency on both sides based on binding ratified treaties. I'm awfully glad that Senator Biden was able to bring his influence to bear to get the reduction, such as it is, in the form of a treaty.

For this reason, I've joined some other scientists in a statement calling for an accelerated reduction of our nuclear arsenal and other steps to improve our security. And, with the committee's permission, I'd like to include that statement in the published text of my testimony, but not read it here.

The CHAIRMAN. It will be included in the record.

Dr. WEINBERG. Thank you.

It's not only that we're not moving fast enough in the right direction, not remotely fast enough, but, in some respects, the Bush administration seems to be moving in just the wrong direction. One example is the abrogation of the 1972 treaty limiting anti-ballistic missile systems. Another example, which I want to talk about here briefly, is the resurrection of the idea of developing nuclear weapons for use rather than for just deterrence. For instance, the Nuclear Posture Review calls for the development of low-yield earth-penetrating nuclear weapons for attacks on underground facilities.

Now, this doesn't make much sense, technically. You can't drive a missile down below a certain depth before it crumples and will not perform its task. The depth of penetration—I think a reasonable maximum, according to calculations I've gone over, is about 80 feet in rock or concrete. That's just considering the crumpling of the missile. The actual maximum depth is likely to be considerably less than that because of the vulnerability of electronics in the missile to the great deceleration that you would be having.

Now, that is enough of a depth to convert the missile's energy into a destructive underground blast wave. But even so, it would only destroy tunnels that are at depths considerably less than 300 feet, so it would have no effect against really deep targets. And the precise depth to which it would be effective wouldn't be known anyway, because it would depend on geological details that we couldn't know.

To have confidence that the underground target had been destroyed, if we developed such a weapon and used it, we'd still have to have troops on the ground. As Loren Thompson said in an article

in the Wall Street Journal, “We would need American boots on the ground moving site to site, eliminating all weapons and facilities.” So with American troops on the ground, it’s not clear that, even with such a weapon, that we would find a need for using it.

There’s a great reason for not using it, and that is the radiation effects it would produce. Experience in the series of underground nuclear explosions in Project Ploughshare showed that in order to keep the cavity containing a lot of radioactive debris below the surface, a one-kiloton explosion would have to be kept below about 300 feet. The depth for smaller yields decreases very slowly with the yield. There’s no way we’re going to drive an earth-penetrating weapon down to below 300 feet. It’s just not possible unless someone takes it down in an elevator.

In order to avoid the fallout from a nuclear explosion at the greatest depth I think we can reach, about 80 feet, you’d have to reduce the yield to the equivalent of 19 tons of TNT. It’s not much more than you could achieve anyway with conventional explosives.

In any case, the experience on which the figure I mentioned, of 300 feet, is based, the experience in the Ploughshare test, had to do with explosions in underground cavities that were excavated, but without a shaft going to the surface. But our earth-penetrating weapon would create such a shaft from the surface down to where the explosion occurs, a very nice way of producing a tremendous plume of radioactive material, which we would not be happy about.

And it’s not just a question of not wanting to cause collateral damage to innocent civilians. Those civilians may be people we’re trying to get over on our side, as we have been in Afghanistan. They may be our own troops going from site to site checking whether or not we’ve actually destroyed these underground facilities. This is not the cold war, as we keep being told. We have to worry about the damage we do to people on the ground near where the attack is occurring.

The fallout produced by a one-kiloton explosion at a depth of 80 feet would kill everyone within a radius of about half a mile, and that’s if the wind isn’t blowing. If the wind is blowing, God knows where the fallout goes. It might land on one of our allies.

There are other signs of an increased interest in developing nuclear weapons for actual use. There’s a statement by William Schneider—this, as far as I know, was not in the Nuclear Posture Review, but it’s another straw in the wind—the chairman of the Defense Science Board, that announced a renewed study of nuclear armed missile defense interceptors. In a sense, I find this perversely welcome, because it verifies what critics of missile defense systems have been saying all along, that the decoy problem will prevent you from being able to launch a successful exo-atmospheric interception. I think there are severe problems with nuclear interceptors also, but I won’t go into them, as this wasn’t part of the Nuclear Posture Review.

Now, for the dubious advantages of such nuclear weapons, we would be paying a very high price. One item on the bill, as has been mentioned by a number of people—I think, Senator Biden, you mentioned it—was the pressure for resumed testing of nuclear weapons. Just think, for example, of relying on underground, deep-penetrating nuclear weapons and not knowing whether that shaft

that the weapon itself digs from the surface down to where it explodes is going to provide a highway for the fallout to come out. I don't see how we can know that without carrying out testing—testing, in fact, which has a good chance of producing fallout in the atmosphere. How can we know that a missile defense system, based on nuclear interceptors, would work in a realistic engagement without testing it in a realistic way?

The resumption of nuclear testing would be a dangerous break with the past. We haven't carried out even underground tests since the previous Bush administration, and neither has Russia or China, which is very much in our interest. It would violate our commitment under the Nonproliferation Treaty to de-emphasize the role of nuclear weapons, and it would have terrible effects on proliferation throughout the world.

And, furthermore, of course, the programs to develop nuclear weapons for use would stand in the way of what I think is so essential to let us all get through the night without terrible fears about a mistaken Russian attack. It would stand in the way of a massive mutual reduction of nuclear arms. In fact, I'm not sure whether a massive reduction of nuclear weapons is being passed over in order for us to be able to continue these weapons programs, or whether it's the other way around, the weapons programs are being proposed in order to slow down cuts in our nuclear arsenal. It's probably something of both.

I remember the days of the debate about the first test ban treaty, when one of the arguments against ratifying the test ban treaty is that it would force us to stop work on wonderful opportunities, like Project Orion, which was to build a spaceship that would be propelled by continual nuclear explosions, or Project Ploughshare, digging canals with nuclear weapons.

This is a great moment of opportunity. Now, for the first time, we have a President of Russia who is anxious to have good relations with the United States, anxious to reduce forces, anxious to decommission nuclear weapons, and, furthermore, who, unlike President Yeltsin, has the power to bring this about in his own country. And it seems to me we're letting this opportunity slip away.

But, of course, the proposals for new nuclear weapons are much more dangerous than Ploughshare or Orion were. We are, as Senator Biden said, the world's leader in conventional weaponry, and it's terribly in our interest to preserve a somewhat mystical taboo against the use of nuclear weapons, a taboo that has grown steadily stronger since 1945.

I'm not worried whether our developing nuclear weapons is going to make other countries not like us, but I'm worried about its effect on what they do. I know that previous nuclear programs, like that of India, might have been stopped if it were possible to have a comprehensive test ban with Russia early enough.

Is it unlikely that the same kind of decisionmaking will apply in Egypt or Iran or Japan? Is it likely that the nonproliferation treaty will survive at all when the United States is developing and testing nuclear weapons for actual use?

Now, it's very often argued that the future is uncertain, and that we can't tell what enemies we might face in coming years, and,

therefore, we should retain a maximum capability to use our nuclear arsenal in whatever way may prove necessary. Well, it is true the future is uncertain. But we may increase rather than decrease uncertainty by maximizing our nuclear capabilities. We can't tell what enemies we may face, it's often said. Well, that's true. We also can't tell what crisis may occur in Russian-U.S. relations that may put us at risk from a mistaken launch on their part. We can't tell what terrorists may appropriate part of the Russian arsenal. We can't tell what dangers we may face from a large Chinese arsenal built to preserve their deterrence from the threat of an American first strike backed up by a missile defense system. We can't tell what countries may be tipped toward a decision to develop nuclear weapons by new U.S. weapons programs or resume nuclear testing. There's no certainty, whatever we do.

We have to decide what are the most important dangers. And these dangers may be increased rather than decreased by other countries' responses to our nuclear weapons programs. As far as I know, the Nuclear Posture Review does not even engage the question of what the programs it calls for will have on the actions of other countries. We don't have the last move.

And, now, Senator Biden, you asked why would we hang on to this enormous nuclear arsenal and develop this incredible national missile defense system of dubious effectiveness? As a partial answer, I'd like to tell a little story. It may be already familiar to you and others in the room.

At the beginning of the 20th century, Britain was in very much the same position we are now, but with regard to naval strength. Just as we are today overwhelmingly the most powerful country as far as conventional weapons are concerned, they were then overwhelmingly the world's greatest naval power. Then in 1905, Admiral Sir John Fisher, the First Sea Lord, pushed forward the construction of a new type of battleship which would have all big guns—12-inch guns, the largest that could be made at the time. It would be very fast, greatly superior to any battleship that existed. The prototype was named after one of Nelson's ships, the "*Dreadnought*."

Dreadnoughts really were superior to all previous battleships. And suddenly what counted in naval arms races were not the size of a country's fleet, in which Britain was already supreme, but the number of its dreadnoughts. Other countries could now compete with Britain by building dreadnoughts. A naval arms race began between Britain and Germany, in which Britain stayed ahead only with great expense and difficulty.

There were complaints about this at the time. Admiral of the Fleet, Sir Frederick Richards, complained in Parliament that, "The whole British fleet was morally scrapped and labeled obsolete at the very moment when it was at the zenith of its efficiency and equal not to two, but practically all the other navies in the world combined."

This sounds very familiar, very strangely similar to what we have now. So national security is not always best served, and certainty is not always built, by building the best weapons we can imagine.

As a scientist, I can recognize some of the motivation for this, though probably not the whole motivation. There's a kind of technological restlessness at work, which we see from the building of the *Dreadnought* to this year's Nuclear Posture Review. Going back to Fisher, years before the *Dreadnought* was built, when he was a newly appointed captain in charge of the Royal Navy's Torpedo School, Fisher explained that, "If you are a gunnery man, you must believe and teach that the world is safe by gunnery and will only be saved by gunnery. If you are a torpedo man, you must lecture and teach the same thing about torpedoes." Well, this is not a corrupt or an unpatriotic attitude, but we don't have to be guided by it.

Thank you.

[The prepared statement of Dr. Weinberg with an attachment follows:]

PREPARED STATEMENT OF DR. STEVEN WEINBERG, WINNER OF THE NOBEL PRIZE IN PHYSICS (1979), PROFESSOR OF PHYSICS, UNIVERSITY OF TEXAS, AUSTIN TX

Chairman Biden, Senator Helms, and members of the Committee, I am grateful to you for giving me the opportunity to express my views on issues raised by the recent Nuclear Posture Review. My research has mostly been on elementary particle physics and cosmology, which does not give me any special credentials for commenting on strategic issues, but I worked actively on military technology in the 1960s and 1970s as a member of the JASON group of defense consultants, and less intensively in recent years as a senior advisor to this group. I have also served as a consultant to the U.S. Arms Control and Disarmament Agency, and have written about defense matters from time to time. Because this hearing is open to the public I have not asked to see the full classified version of the posture review, but I have read the unclassified briefing on the posture review by Assistant Secretary Crouch and the transmittal letter by Secretary Rumsfeld, as well as excerpts from the posture review that have appeared in the press. On this basis I think I can comment on the general issues surrounding the posture review, if not on the details of the review itself.

The U.S. is now in possession of an enormous nuclear arsenal, left over from the days of the cold war. We have about 6,000 operationally deployed strategic warheads today, far more than could possibly be needed for deterrence against any conceivable enemy. The Bush administration plans to reduce this number, but very slowly, to about 3,800 in 2007 and ultimately to about 1,700 to 2,200 in 2012, but this would still be far more than could be used in retaliation for any other country's use of weapons of mass destruction. Furthermore, the administration's plans call for the retention of about 7,000 intact warheads in overhaul, tactical nuclear warheads, and the "inactive reserve" stockpile and other reserves, not to mention a large number of plutonium pits and other weapon components. Taking into account the different counting rules, the rate of reduction of our nuclear arsenal proposed by the Bush administration is about half the rate that would have been called for by the START II and START III agreements. This is not liquidating the legacy of the cold war, but hanging on to it.

There was a rationale for maintaining a very large nuclear arsenal during the cold war: We had to be sure that the Soviets would be deterred from a surprise attack on the U.S. by their certainty that enough of our arsenal would survive any such attack to allow us to deliver a devastating response. I don't say that U.S. strategic requirements were actually calculated in this way, but the need for a survivable deterrent at least provided a rational argument for a large arsenal.

This rationale for a large nuclear arsenal is now obsolete. No country in the world could threaten our submarine-based deterrent, and even with an implausibly rapid missile development, for decades to come no country except Russia will be able to threaten more than a tiny fraction of our land-based deterrent.

There is, however, another possible use of a large nuclear arsenal: to launch a preemptive attack against Russian strategic weapons. I say "Russian," because the large size of our arsenal would be irrelevant for a preemptive attack against any other power. If we ever found that a hostile "rogue" state were about to deploy a few dozen nuclear-armed ICBMs, and if we could locate them, then they could be destroyed by only a tiny fraction of our nuclear arsenal, and in fact even by conven-

tionally armed cruise missiles. On the other hand, even if we were unable to neutralize the Soviet deterrent during the cold war, now as Russian nuclear forces become increasingly immobile, with their missile launching submarines tied up at dockside and their land-based mobile ICBMs kept in fixed garrisons, our large nuclear arsenal may put Russian nuclear forces at risk to a preemptive U.S. strike.

It might seem that the ability to launch a preemptive strike against Russian strategic nuclear forces is a pretty good one to have, but in fact it poses enormous dangers, and to us as well as to Russia. The Russians can count missiles as well as we, and as “prudent” defense planners they are likely to rate our chances of a successful preemptive attack more highly than we would. The cheap and easy defense from this perceived danger will be for the Russians to keep their forces on a hair-trigger alert, posing the danger to the U.S. of a massive Russian attack by mistake. (According to Russian sources, it now takes 15 seconds for the Russians to target their ICBMs, and then 2-3 minutes to carry out the launch.) This danger is exacerbated by the gradual decay of Russian surveillance and control capabilities, which has already led them on one occasion to mistake a Norwegian research rocket for an offensive missile launched from an American submarine in the Norwegian sea. The danger will be further increased if the U.S. proceeds with a national missile defense, that might be perceived by the Russians to have some capability against a ragged Russian second strike, or if we follow the recommendation of the Nuclear Posture Review, that the U.S. should develop real-time intelligence capabilities of a sort that would allow us to target even mobile Russian missiles on the road.

Even though the threat of a large Russian mistaken attack is not acute, it is chronic. It is also the only threat we face that could destroy our country beyond our ability to recover. Compared with this threat, all other concerns about terrorism or rogue countries shrink into insignificance.

This brings me to the one real value of our large nuclear arsenal: we can trade away most of our arsenal for corresponding cuts in Russian forces. I don't mean cuts to about 2,000 deployed weapons, but as a first step to not more than a thousand nuclear weapons of all sorts, including those in various reserves, as called for by a 1997 report of the National Academy of Sciences. [A detailed proposal for the size of an adequate deterrent that I find reasonable has been given in “Toward True Security: A Nuclear Posture for the Next Decade,” a joint report of the Federation of American Scientists, the National Resources Defense Council, and the Union of Concerned Scientists.] In that way, although the danger of a mistaken Russian launch would not be eliminated, the stakes would be millions or tens of millions of casualties, not hundreds of millions. It would also reduce the danger of diversion of Russian nuclear weapons or weapons material to criminals or terrorists. Instead of seeking the maximum future flexibility for both sides in strategic agreements with the Russians, we should be seeking the greatest possible irreversibility and transparency on both sides, based on binding ratified treaties. For this reason I have joined the distinguished scientists Hans Bethe, Richard Garwin, Marvin Goldberger, Kurt Gottfried, and Walter Kohn in a statement calling for an accelerating reduction of our nuclear arsenal and other steps to improve our security. With the Committee's permission, I would like to include that statement in the published text of my testimony.

Not only are we not moving fast enough in the right direction—in some respects the Bush administration seems to be moving in just the wrong directions. One example is the abrogation of the 1972 treaty limiting anti-ballistic missile systems. [For my comments on missile defense, see “The Truth About Missile Defense,” in *The New York Review of Books XLIX*, No. 2, 41–47 (February 14, 2002).] Another example is the resurrection of the idea of developing nuclear weapons for use, rather than for just deterrence.

For instance, the Nuclear Posture Review calls for the development of low yield earth penetrating nuclear weapons for attacks on underground facilities. There are great technical difficulties here, which might prevent our using such a weapon even if we had it. Calculations by Robert W. Nelson of Princeton University show that an earth-penetrating weapon cannot be driven down to a depth greater than about four times its length in concrete. Increasing the velocity of impact beyond a certain point just causes the weapon to crumple, so that the depth of penetration decreases rather than increases. This sets an upper limit on the depth of penetration of about 80 feet for a weapon that is twice the length of our present B61-11 earth-penetrating nuclear weapon. The actual depth that may be reached in practice may be considerably less, because the velocity of penetration must be kept low enough to preserve the weapon's electronics. Now, an 80 foot depth is sufficient to put most of the energy of the explosion into a destructive underground blast wave, but even so a 1 kiloton explosion would only destroy tunnels that are at depths considerably less than 300 feet, with the precise range sensitive to geological details that we are

not likely to know. To have confidence that the underground target had been destroyed we would have to have troops on the ground anyway, so that a missile attack might not even be necessary.

Particularly worrisome are radiation effects. Experience in the series of underground nuclear explosions in Project Plowshare showed that to keep the cavity produced by the explosion below the surface, a one-kiloton explosion would have to be kept below 300 feet, with the depth for smaller yields decreasing only as the one-third power of the yield. To avoid fallout from a nuclear explosion at a depth of only 80 feet it would be necessary to reduce the yield to 19 tons, not much more than could be delivered using conventional explosives. I don't believe that there is any way for a nuclear weapon to penetrate to hundreds of feet without someone carrying it down in an elevator, so that using nuclear weapons to attack underground targets is bound to produce radioactive fallout. In any case, the penetration of a weapon through the earth would create a shaft to the surface, something that did not exist in the Plowshare tests, so the depth required to avoid fallout is bound to be even larger than indicated by these tests.

The fallout produced by a one-kiloton explosion at a depth of 80 feet would kill everyone within a radius of about half a mile. This is for still air; wind can carry the fallout for tens of miles. We could be killing not only the local population, which (as in Afghanistan) we might be trying to enlist on our side, but also whatever forces we or our allies have on the ground.

There was another sign of increased interest in developing nuclear weapons for actual use in a recent statement by William Schneider, the chairman of the Defense Science Board, announcing a renewed study of nuclear-armed missile defense interceptors. In one sense I almost find this welcome, because it confirms what critics of missile defense (including myself) have been saying, that the non-nuclear "hit-to-kill" mid-course interceptors of the planned National Missile Defense system could be defeated by decoys or other penetration aids. Of course, nuclear-armed missile defense interceptors would have technical and political problems of their own, problems that have led to the abandonment of nuclear-armed interceptors as components in missile defense since the administration of Ronald Reagan.

For the dubious advantages of such nuclear weapons, we would pay a high price. One item on the bill is the pressure for resumed testing of nuclear weapons. As I mentioned, calculations indicate that any nuclear weapon that would be effective against underground targets would release large quantities of radioactivity. Even if the depth of penetration of a nuclear weapon were somehow increased and the yield decreased enough so that no fallout was expected, how without testing these weapons in action would you ever have confidence that fallout would not escape, especially after our weapon has created its own shaft to the surface? And how would anyone have confidence in a missile defense system based on nuclear-armed interceptors without tests that involve nuclear explosions in or above the atmosphere?

The resumption of nuclear testing would be a dangerous break with the past. We have not carried out even underground tests since the previous Bush administration. Neither has Russia or China, which is very much in our interest.

The development of new nuclear weapons for war-fighting would in itself violate our commitment under the Nonproliferation Treaty (NPT) to de-emphasize the role of nuclear weapons and to work toward their total elimination. The resumption of nuclear testing for this purpose would make this violation concrete and dramatic, and would thereby do terrible damage to the effectiveness of the NPT in discouraging nuclear weapons programs throughout the world.

The worst thing about programs to develop nuclear weapons for use is that they stand in the way of a massive mutual reduction of nuclear arms. In fact, I'm not sure whether massive reductions in nuclear weapons are being opposed in order for us to be able to continue such weapons programs, or whether the weapons programs are being proposed in order slow down cuts in our nuclear arsenal. Probably something of both. Back in the days when the first test ban treaty was being debated, one of the arguments against it was that it would stand in the way of Project Plowshare, the use of nuclear weapons to do things like digging canals, and Project Orion, the development of a spacecraft propelled by nuclear explosions. The development of nuclear weapons for attacking underground facilities or for missile defense may be today's Orion and Plowshare.

But the current proposals for new nuclear weapons are much more dangerous than the Plowshare or Orion programs. As the world's leader in conventional weaponry, it is very much in our interest to preserve the taboo against the use of nuclear weapons, a taboo that has grown steadily stronger since 1945. Developing and testing new nuclear weapons for actual use teaches the world a lesson that nuclear weapons are a good thing to have. This is not entirely a rational matter. I remember that once in the late 1960s I had lunch at MIT with the chief scientific adviser to

the government of India. I asked about India's plans for developing and testing nuclear weapons, and he said that it all depended on whether the U.S. and USSR could reach an agreement banning all future nuclear testing. I said that that seemed irrational, because it was not the U.S. or the USSR that presented a military threat to India, and even if such a threat did develop, American and Soviet nuclear forces would in any case be so much greater than India's that it would not matter to India if the U.S. or the USSR had stopped testing or gone on testing. He answered that politics is not always based on rational calculations, that there would be great political dissension in Indian governing circles over whether to develop nuclear weapons, and that the spectacle of continued testing of nuclear weapons by the U.S. or the USSR would strengthen the hands of those in India who favored developing nuclear weapons. Is it unlikely that the same will apply to decisions about nuclear weapons in countries like Egypt, or Iran, or Japan? Is it likely that the Non-Proliferation Treaty will survive when the U.S. is developing and testing nuclear weapons for actual use?

It is sometimes argued that the future is uncertain, that we cannot tell what enemies we may face in coming years, and that therefore we should retain a maximum capability to use our nuclear arsenal in whatever way may prove necessary. [For an example, see "Rationale and Requirements for U.S. Nuclear Forces and Arms Control," Keith B. Payne, study director, National Institute for Public Policy, 2001.] It is true that the future is uncertain, but we may increase rather than decrease uncertainty by maximizing our nuclear capabilities. We cannot tell what crisis may occur in U.S.-Russian relations, which may put us at risk from a mistaken launch on their part. We cannot tell what terrorists may appropriate part of the Russian arsenal. We cannot tell what dangers we may face from a large Chinese arsenal, built to preserve their deterrent from the threat of an American first strike backed up by a missile defense system. We cannot tell what countries may be tipped toward a decision to develop nuclear weapons by new U.S. weapons programs or resumed nuclear testing. There is no certainty whatever we do—we have to decide what are the most important dangers—and these dangers may be increased rather than decreased by other countries' responses to our own weapons programs.

To illustrate this and close my testimony, I'd like to tell a little story, which may already be familiar to many of you. At the beginning of the twentieth century Britain was overwhelmingly the world's greatest naval power, much as the U.S. is today the world's leader in conventional arms. Then in 1905 Admiral Sir John Fisher, the First Sea Lord, pushed forward the construction of a new design for a fast battleship armed solely with 12-inch guns, the biggest guns then available. The prototype was named after one of Nelson's ships, the *Dreadnought*. Dreadnoughts really were superior to all previous battleships, and suddenly what counted was not the size of a country's fleet, in which Britain was supreme, but the number of its Dreadnoughts. Other countries could now compete with Britain by building Dreadnoughts, and a naval arms race began between Britain and Germany, in which Britain would stay ahead only with great expense and difficulty. Admiral of the Fleet Sir Frederick Richards complained in Parliament that "The whole British fleet was morally scrapped and labeled obsolete at the moment when it was at the zenith of its efficiency and equal not to two but practically to all the other navies of the world combined." Like Dreadnoughts, nuclear weapons can act as an equalizer between strong nations like the U.S. with great economic and conventional military power, and weaker countries or even terrorist organizations. Evidently national security is not always best served by building the best weapons.

As a scientist, I can recognize a kind of technological restlessness at work, from the building of the *Dreadnought* to this year's Nuclear Posture Review. Years before the *Dreadnought*, as a newly appointed captain in charge of the Royal Navy's torpedo school, Fisher explained that "If you are a gunnery man, you must believe and teach that the world is saved by gunnery, and will only be saved by gunnery. If you are a torpedo man, you must lecture and teach the same thing about torpedoes." There is nothing corrupt or unpatriotic about such attitudes, but we don't have to be guided by them.

SCIENTISTS STATEMENT ON THE MOSCOW SUMMIT—MAY 13, 2002

President Bush, at the forthcoming Moscow Summit, has the opportunity to reduce two supreme dangers to our security and lives:

- the threat that nuclear weapons or weapons usable material in Russia could be stolen and sold to terrorists or hostile states and used as nuclear explosives to destroy American troops abroad or hundreds of thousands of our citizens at home;

- the threat of a massive attack by Russian nuclear-armed missiles due to false warning of a U.S. nuclear strike, which would put at risk the very survival of our nation.

We applaud the cuts in deployed nuclear warheads that are to be agreed to by Presidents Bush and Putin at the Moscow Summit. But the pace with which the administration proposes to carry out the cuts should be accelerated. Furthermore, it remains unclear whether these cuts will be structured and implemented in a manner that would minimize the threats above.

The serious proliferation threat posed by the Russian nuclear weapons complex will only be reduced if the warheads removed from Russian launchers are placed in secure storage, dismantled and the nuclear materials rendered unusable. President Bush, however, appears to be seeking an agreement that would not compel Russia to make its undeployed warheads invulnerable to proliferation. The administration apparently wants to retain its undeployed warheads in a “responsive reserve force” that could be used to reload bombers and missiles on relatively short notice. An agreement allowing this would, of course, give Russia the freedom to also do as it pleases with its weapons.

The administration argues that the responsive force is needed to address unspecified contingencies in the indefinite future. The deployed force of roughly 2,000 U.S. strategic warheads that would remain after the proposed cuts are completed will, however, more than suffice to meet any threat that can be envisaged. It would be folly to hedge against contingencies that cannot even be foreseen, by taking a step now that would exacerbate an urgent and present danger.

To eliminate the threat of a catastrophic Russian launch resulting from its deteriorating warning system, President Bush should advocate that both states adopt postures and procedures such that their nuclear weapons could only be fired after a delay of some days, so that Russia would not maintain its forces in a launch-on-warning posture. Such a posture would not compromise the U.S. capability for retaliation as the bulk of our strategic forces would, without question, survive any attack.

The administration’s position concerning strategic nuclear forces shows little regard for the obligations of the United States under the Nuclear Non-Proliferation Treaty—obligations undertaken because of enlightened self-interest, not altruism. In the context of the Summit, these obligations call for much swifter and deeper cuts, and for a reduced reliance on nuclear weapons as instruments of national policy. The administration’s proposed cuts and its intention to keep withdrawn warheads at the ready implies that this reliance is not abating. When the state with by far the most powerful conventional forces asserts that it can only protect its vital interests with an undiminished reliance on nuclear forces it is undermining the global effort to stem nuclear proliferation.

In the light of these facts and observations, we urge President Bush to propose an agreement to President Putin that would formally commit both states to:

- accelerate the current reductions, and to not return warheads removed from the deployed forces under this agreement to active service;
- a far more rapid, clearly specified and transparent process for dismantling all undeployed warheads and for rendering their nuclear materials unusable, accompanied by a commitment for increased U.S. and Allied financial support to Russia;
- replace their existing prompt-launch nuclear postures by postures within which retaliation to an attack would be delayed, and to adopt transparent measures to that end.

Dr. Hans Bethe

Nobel Laureate; Emeritus Professor of Physics, Cornell University; Head of the Manhattan Project’s Theoretical Division

Dr. Richard Garwin

Senior Fellow for Science and Technology, Council on Foreign Relations; IBM Fellow Emeritus; consultant to the Sandia National Laboratory, former consultant to Los Alamos National Laboratory

Dr. Marvin Goldberger

President Emeritus, California Institute of Technology; member, Council on Foreign Relations, National Academy of Sciences, American Academy of Arts and Sciences

Dr. Kurt Gottfried

Emeritus Professor of Physics, Cornell University; Chairman of the Board, Union of Concerned Scientists

Dr. Walter Kohn

Nobel Laureate; Emeritus Professor of Physics and Research Professor, University of California, Santa Barbara

Dr. Wolfgang K. H. Panofsky

Director Emeritus, Stanford Linear Accelerator Center, Stanford University; Recipient of National Medal of Science and Lawrence and Fermi Awards of the Department of Energy

Dr. Steven Weinberg

Nobel Laureate; Jack S. Josey-Welch Foundation Chair in Science, Regental Professor, and Director, Theory Research Group, University of Texas

The CHAIRMAN. Thank you very much. Senator Lugar had to leave because he had to meet with the Secret Service about another matter, and so he asked me to apologize, but he said he will read the statement. And knowing Senator Lugar, he will read the statements. It's often said by Senators, but not often done.

I would say, as we go to you, Dr. Thompson, to Dr. Weinberg, I remember when we were having a debate on the issue of the strategic stockpile and whether or not we should scrap the Comprehensive Nuclear Test Ban Treaty, which I think was a gigantic mistake. But, at any rate, that's another issue. And a former Secretary of Defense sat before us and said, "I didn't fully understand," and I think he was right. And although we may very well develop the technology to be able to, through simulation, determine the readiness and capability of the existing stockpile, that we are going to lose the young scientists who would participate in that capability being sustained, because, "They like to see things go boom," and he was very serious. He wasn't joking. That was one of his—that was his trump-card argument as to why we needed to be able to resume nuclear testing in order to maintain the interest of young scientists—brilliant young scientists who participate in the program. And so I thought your comment about one of the motivations of—as a scientist is—although you said it somewhat facetiously, I suspect there's some truth to that assertion.

Dr. WEINBERG. Right, Senator. We should give them the opportunity for instance to do elementary particle physics in addition to their work in the Nuclear Stewardship Program.

The CHAIRMAN. Well, I think that's true, but apparently it's not as glamorous, according to one of the scientists. And I am way above my pay grade here.

Dr. Thompson, welcome. It's a delight to have you here.

STATEMENT OF LOREN B. THOMPSON, PH.D., CHIEF OPERATING OFFICER, LEXINGTON INSTITUTE; ADJUNCT PROFESSOR OF SECURITY STUDIES, GEORGETOWN UNIVERSITY, WASHINGTON, DC

Dr. THOMPSON. Thank you, Senator Biden. Thank you for inviting me to offer my views on the administration's views on the Nuclear Posture Review.

I'd like to spend a few minutes this afternoon explaining why the findings of the review are valid and, if they are implemented, will bolster the Nation's security. But before doing so, allow me to provide some historical context. This month marks the 40th anniversary

sary of a major development in American nuclear strategy. On May 5, 1962, Defense Secretary Robert McNamara revealed, in a secret meeting with NATO allies in Athens, that the Kennedy administration was replacing the Eisenhower strategy of massive retaliation.

The nuclear plan the new administration had inherited contained only one option, an all-out attack on every city in Russia, China, and Eastern Europe that would have killed between 360 and 425 million people. There were no provisions for withholding a strategic reserve, no provisions for preserving control over forces once a war began, and no provisions for trying to induce restraint in Soviet behavior.

McNamara thought massive retaliation was lunacy, dangerous and unbelievable. So in the spring of 1962, he approved a new war plan that focused on limiting the damage from a nuclear exchange. The new plan contained several options, including that of avoiding attacks on Russian cities with the intention of encouraging similar restraint on the part of the Soviets. Although today we remember Robert McNamara as the father of mutual assured destruction, the possibility of restraint reflected in his 1962 war plan remained national strategy for the remainder of his tenure and beyond.

When President Nixon directed a revision of nuclear strategy in 1969, he added additional warfighting options aimed at controlling escalation and limiting damage, a practice followed by every subsequent administration.

Now, why do I mention these matters today? For two reasons. First of all, to demonstrate that major revisions in nuclear strategy are nothing new. And, second, to argue that the findings of the Nuclear Posture Review are fully consistent with the values and the goals of past administrations. The Nuclear Posture Review is the beginning of a long-term effort to modernize the Nation's strategy and its forces so that they remain effective in a radically transformed global security environment. But its goals are identical to those of past strategic revisions: to minimize the likelihood of massive attack on the United States and its allies, and to limit the damage if such attacks occur.

How does it do that? It begins by acknowledging the changes that have occurred in the security environment since our current nuclear posture came into being during the cold war. The Soviet Union is gone, and the nuclear forces that its democratic successors inherited are shrinking fast. In the 8 years since the Clinton administration conducted the first post Soviet nuclear review, 4,000 warheads and 800 nuclear delivery vehicles have been removed from the Russian operational force. That's about a 40 percent reduction.

The motivation of Russian leaders has changed also. Their empire, the ideology have ebbed away to be replaced by the normal concerns that any nation would have about sovereignty and security. U.S. military planners today are more concerned about Russian nuclear accidents or theft than they are about deliberate aggression.

But while the defining threat of the cold war has disappeared, new dangers have emerged. They are more diverse, and we understand them less well. These include half a dozen rogue states with programs to develop weapons of mass destruction and terrorist

movements such as al-Qaeda, which may be able to secure the means of mass murder and global commerce. Some of the new aggressors are beyond the reach of traditional deterrence. Some of them are accident prone. And all of them have access to weapons options that did not occur or exist for earlier adversaries.

With the political and technological landscapes changing rapidly, the Nuclear Posture Review came to the obvious conclusion that many of the assumptions of cold war nuclear strategy may no longer be valid.

Recognizing the unpredictability of challenges, even in the near term, the review abandons the traditional threat-driven approach to nuclear planning in favor of a more flexible capabilities-based approach. Now, what does that mean? What it means is that the review identifies military capabilities necessary to cope with the widest range of hypothetical adversaries. In the words of the Quadrennial Defense Review, those capabilities include the capacity to reassure allies, to dissuade competitors, to deter potential aggressors, and to defeat actual enemies.

Because the spectrum of actors that must be influenced is very large, the required capabilities are correspondingly diverse. First, the United States must have offensive nuclear forces suitable for surviving surprise attack, and then responding in a measured way to many different contingencies. Second, it must have non-nuclear offensive forces that can hold at risk key enemy assets when a nuclear response would be disproportionate to the provocation, or counterproductive. Third, they must have active and passive defenses, including homeland defenses, to blunt the consequences of an attack on America and its allies. Not just to cope with the failure of deterrence, but also to bolster deterrence itself. Fourth, it must have a resilient command network to maintain control over all of its forces under the most trying circumstances. Fifth, it must have an intelligence system that can find and target the most elusive elements of an enemy's military capabilities. And, finally, as if all this were not enough, it must meet these requirements while facilitating the further shrinkage of the Russian nuclear arsenal, which, even today, represents the vast majority of nuclear weapons outside the United States.

The force posture derived from these requirements has been called a "triad," but it bears little resemblance to the collection of planes and missiles that made up the cold war nuclear triad. Only one of its three legs is offensive weapons. The other two legs are defensive measures and a revitalized nuclear infrastructure. Moreover, the offensive leg consists partly of conventional strike systems, with the remaining nuclear weapons representing only a small fraction of the cold war force.

And just as the Bush administration prefers to develop a tiered or multi-layered approach to missile defenses, so it proposes a tiered offensive approach consisting of three layers: operationally deployed weapons, reserve weapons that can be returned to operational duty within months or years, and inactive weapons awaiting destruction that could be refurbished.

The existence of a large reserve that acts as a hedge against unforeseen dangers enables the Nuclear Posture Review to embrace major reductions in the nuclear arsenal. As agreed to by the Rus-

sians earlier this week, the review envisions reducing the current operational force of 6,000 warheads by a third over the next 5 years, and by two thirds over the next 10 years.

Whether these reductions actually occur will depend on security trends. But recent progress in the development of precision-guided conventional munitions suggest that nuclear cuts might proceed even if threats do not diminish. For example, the Air Force is considering development of a satellite-guide glide bomb that could penetrate 60 feet of extremely hardened material, reducing the need for nuclear weapons in attacking deeply buried bunkers.

As of today, the United States actually has no plans to develop new nuclear munitions, and it is proceeding with plans to eliminate whole classes of delivery systems from nuclear service, such as the MX missile and the B-1 bomber.

The force structure recommended by the Nuclear Posture Review will materially enhance global security. First, it will preserve a stable structure of nuclear deterrence while facilitating huge reductions in the U.S. and Russian arsenals. Second, it will reduce reliance on deterrence by acquiring offensive and defensive capabilities for coping with accident-prone or irrational adversaries. Third, it will provide future Presidents with the widest possible range of options, both nuclear and non-nuclear, for meeting emergent security needs. And, finally, it will retain the flexibility to restore nuclear capabilities, if necessary, by establishing a strategic reserve and revitalizing the nuclear infrastructure. I guess I would say parenthetically that, although I hope Professor Weinberg's view of the future is valid, that, in fact, there is no conceivable reason for needing more nuclear forces than we entertained in the NPR. I think that is more an expression of faith than physics. There's simply no way of knowing what the future holds.

With regard to this latter issue, it's important to bear in mind that the end state the administration envisions for offensive nuclear forces would, on a typical day, consist of only 8 ballistic-missile submarines at sea and no more than 500 single-warhead Minuteman missiles on alert. The rest of the land-based missile force would be gone. Virtually all of the bombers would be dedicated primarily to conventional missions. And many of the 14 subs would be in port.

We may decide in the future that such a force is simply too small, so it is necessary to maintain a reserve force, especially until we rebuild our more abundant nuclear industrial base. Senator Biden, that comment you had at the beginning about losing the young scientists, it's come true. The average scientist now in this system is my age, half a century old.

The CHAIRMAN. You don't look it.

Dr. THOMPSON. I feel older.

For the time being, though, I think that the Bush administration has fashioned a prudent and a progressive posture that reflects a fair amount of optimism about the future of world politics.

Thank you.

[The prepared statement of Dr. Thompson follows:]

PREPARED STATEMENT OF LOREN B. THOMPSON, PH.D., CHIEF OPERATING OFFICER,
LEXINGTON INSTITUTE AND ADJUNCT PROFESSOR OF SECURITY STUDIES, GEORGETOWN UNIVERSITY

THE NUCLEAR POSTURE REVIEW: A NECESSARY EVOLUTION IN NATIONAL STRATEGY

Mr. Chairman and Members of the Committee, thank you for inviting me to offer my views on the administration's Nuclear Posture Review.

I'd like to spend a few minutes this morning explaining why the findings of the review are valid, and if implemented will bolster the nation's security.

Before doing so, though, allow me to provide some historical context.

This month marks the 40th anniversary of a major development in American nuclear strategy.

On May 5th, 1962, defense secretary Robert McNamara revealed in a secret meeting with NATO allies that the Kennedy Administration was replacing the Eisenhower strategy of "massive retaliation."

The nuclear war plan the new administration had inherited contained only one option—an all-out attack against every major city in Russia, China and Eastern Europe that would kill between 360 and 425 million people.

There were no provisions for withholding a strategic reserve, or preserving control over forces once war began, or trying to induce restraint in Soviet behavior.

McNamara thought massive retaliation was lunacy—dangerous and unbelievable—so in spring of 1962 he approved a new war plan that focused on limiting the damage from a nuclear exchange.

The new plan contained several options, including that of avoiding attacks on Russian cities to encourage similar restraint on the other side.

Although today we remember Robert McNamara as the father of "mutual assured destruction," the possibility of restraint reflected in his 1962 war plan remained national strategy for the rest of his tenure, and beyond.

When President Nixon directed a revision of nuclear strategy in 1969, he added additional warfighting options aimed at controlling escalation and limiting destruction, a practice followed by every subsequent administration.

I have two reasons for mentioning these matters today—

- first, to demonstrate that major revisions in nuclear strategy are nothing new; and
- second, to argue that the findings of the Nuclear Posture Review are fully consistent with the values and goals of past administrations.

The Nuclear Posture Review is the beginning of a long-term effort to modernize the nation's nuclear strategy and forces so that they remain effective in a radically transformed global security environment.

But its goals are identical to those of past strategic revisions: to minimize the likelihood of massive attack on the United States and its allies, and to limit the damage if such attacks occur.

How does it do that?

Step One: Defining the Threat

It begins by acknowledging the changes that have occurred in the security environment since our current nuclear posture came into being during the Cold War.

The Soviet Union is gone, and the nuclear force inherited by its democratic successors is shrinking fast.

In the eight years since the Clinton Administration conducted the first post-Soviet nuclear review, 4000 warheads and 800 delivery vehicles have been removed from the Russian operational force—roughly a 40% reduction.

The motivation of Russian leaders has changed too—their empire and ideology have ebbed away, to be replaced by the normal concerns that any nation has about sovereignty and security.

U.S. military planners today are more concerned about Russian nuclear accidents or theft than they are about deliberate aggression.

But while the defining threat of the Cold War has disappeared, new dangers have emerged that are more diverse and less understood.

These include half a dozen rogue states with programs to develop weapons of mass destruction, and terrorist movements such as Al Qaeda that may be able to secure the means of mass murder in global commerce.

Some of the new aggressors are beyond the reach of traditional deterrence; some are accident-prone; and all have options afforded by new technology that were not available to earlier enemies.

With the political and technological landscapes changing rapidly, the Nuclear Posture Review concluded that many of the assumptions of Cold War nuclear strategy may no longer be valid.

Step Two: Determining Requirements

Recognizing the unpredictability of challenges even in the near-term, the review abandons the traditional threat-driven approach to nuclear planning in favor of a more flexible, capabilities-based approach.

In other words, it identifies the military capabilities necessary to cope with the widest range of hypothetical adversaries.

In the words of the Quadrennial Defense Review, those capabilities include the capacity to reassure allies, dissuade competitors, deter potential aggressors and defeat actual enemies.

Because the spectrum of actors that must be influenced is large, the required capabilities are correspondingly diverse.

First, the U.S. must have offensive nuclear forces suitable for surviving surprise attack and then responding in a measured way to many different contingencies.

Second, it must have non-nuclear offensive forces that can hold at risk key enemy assets when a nuclear response would be disproportionate to the provocation, or counter-productive.

Third, it must have active and passive defenses to blunt the consequences of an attack on America and its allies, both to bolster deterrence and cope with its failure.

Fourth, it must have the resilient command networks necessary to maintain control over all of its forces under the most trying circumstances.

Fifth, it must have an intelligence system that can find and target the most elusive elements of an enemy's military capabilities.

And finally, as if all this were not enough, it must meet these requirements while facilitating the further shrinkage of the Russian nuclear arsenal—which even today represents the vast majority of nuclear weapons outside the U.S.

Step Three: Delineating a Posture

The force posture derived from these requirements has been called a “triad,” but it is very different from the collection of planes and missiles that made up the Cold War nuclear triad.

Only one of its three legs is offensive weapons; the other two legs are defensive measures and a revitalized nuclear infrastructure.

Moreover, the offensive leg consists partly of conventional strike systems, with the remaining nuclear weapons representing only a small fraction of the Cold War force.

And just as the administration prefers to develop a tiered or multilayered approach to missile defenses, so it proposes a tiered offensive force consisting of three layers:

- operationally deployed weapons;
- reserve weapons that can be quickly returned to operational duty; and
- inactive weapons awaiting destruction that could be refurbished.

The existence of a large reserve that acts as a hedge against unforeseen dangers enables the Nuclear Posture Review to embrace major reductions in the nuclear arsenal.

As agreed to by the Russians earlier this week, the review envisions reducing the current operational force of 6000 warheads by a third over the next five years, and by two-thirds over the next ten years.

Whether these reductions actually occur will depend on global security trends, but recent progress in the development of precision-guided conventional weapons suggest nuclear cuts might proceed even if threats do not diminish correspondingly.

For example, the Air Force is considering development of a satellite-guided glide-bomb that could penetrate 60 feet of extremely hardened material, reducing the need for nuclear weapons in attacking deeply buried bunkers.11As of today, the U.S. has no plans to develop new nuclear munitions, and is proceeding with plans to eliminate whole classes of nuclear delivery systems such as the MX missile and B-1 bomber.

Assessing the Advantages

The force structure recommended by the Nuclear Posture Review will materially enhance global security.

First, it will preserve a stable structure of nuclear deterrence while facilitating huge reductions in the U.S. and Russian arsenals.

Second, it will reduce reliance on deterrence by acquiring offensive and defensive capabilities for coping with accident-prone or irrational adversaries.

Third, it will provide future Presidents with the widest possible range of options, both nuclear and non-nuclear, for meeting emergent security needs.

And finally, it will retain the flexibility to restore nuclear capabilities if necessary by establishing a strategic reserve and revitalizing the nuclear infrastructure.

In the latter regard, it is important to bear in mind that the end-state the administration envisions for offensive nuclear forces would, on a typical day, consist of only eight ballistic-missile submarines at sea and 500 single-warhead Minuteman missiles on alert.

The rest of the land-based missile force would be gone, the bombers would be dedicated primarily to conventional missions, and many of the subs would be in port.

We may decide in the future that such a force is too small, so it is necessary to maintain a reserve force, especially until we rebuild our moribund nuclear industrial base.

For the time being, though, the Bush Administration has fashioned a prudent and progressive posture that reflects a fair amount of optimism about the future of world politics.

The CHAIRMAN. Thank you very much. Joe.

**STATEMENT OF JOSEPH CIRINCIONE, SENIOR ASSOCIATE
AND DIRECTOR, NON-PROLIFERATION PROJECT, CARNEGIE
ENDOWMENT FOR INTERNATIONAL PEACE, WASHINGTON,
DC**

Mr. CIRINCIONE. Yes, Senator. Time is short. We all want to have lunch. I want to thank you very much for allowing me to—

The CHAIRMAN. Well, I'm fine. Don't worry about me. I don't want to trespass on your time, though. You have all the time you want. I'm anxious to hear what you have to say.

Mr. CIRINCIONE. That's a dangerous thing to say, Senator.

Thank you very much.

The CHAIRMAN. You've never disappointed me.

Mr. CIRINCIONE. Thank you very much for the honor of testifying here, and thank you, Senator Lugar and Senator Hagel and the other members of the committee. I'll just summarize my statement and submit the written statement for the record, with your permission.

Let me start off with some things that are not in my statement, because they actually weren't in the Nuclear Posture Review, and that is any mention of the Cooperative Threat Reduction programs that the United States has been implementing successfully for the last 10 years with Russia. The posture review puts forth the idea of a new triad of strategic nuclear forces, advanced conventional munitions, and ballistic missile defenses. It says that this new triad will reduce the risk to the Nation as it draws its nuclear forces down.

I don't really think much of this concept. I think it represents a consultant's viewgraph more than a valid strategic vision. But if the President is going to adopt this, he should be strongly urged to add a fourth leg to this three-legged stool, and that would be the Nunn-Lugar programs. It's critical to see these as integral to our efforts to reduce the nuclear risks, not as something external to them. Whenever we talk about agreed reductions in strategic forces, we should immediately follow that with discussion of secure storage for those warheads and verifiable elimination of those warheads. If you only do the first step, you are not appreciably increasing the national security of this country or reducing the risk from

nuclear attack. I commend Senator Lugar for the leadership that he has taken and continues to take in this field.

I disagree with my colleague, Loren Thompson, here, and am in strong agreement with Admiral Owens and Dr. Weinberg. I think the Nuclear Posture Review is a deeply flawed document and, if adopted as national policy, could cause irreparable harm to the national security of the United States. I take some comfort in the fact that this document, as far as I know, remains simply the recommendations of the Department of Defense with the participation of the Department of Energy, that the President has not yet taken any policy actions based on this posture review. He has not yet issued, and, I understand, probably will not issue, Presidential decision directives based on this review.

I'm speaking now way above my pay grade, and I would encourage the committee to investigate this matter forward. What actions does the President anticipate taking, based on this review? It may not be too late to affect the President's decisions.

When I say this is a flawed document and could do irreparable harm, I mean that, although, as you've pointed out, Senator, that many of the recommendations in this review incrementally adapt policies begun in previous administrations, taken as a whole, the proposals represent a radical change in our current nuclear weapons policy totally disproportionate to the threat. I think that the proposed policies could make the use of nuclear weapons by the United States or other nations more likely.

In an issue that might directly concern this committee, I'm fearful that adoption of these policies could be construed by some as a material breach of the United States' 30-year commitment to article VI of the nonproliferation treaty. If the United States, as recommended by this review, maintains 10,000 nuclear warheads for the indefinite future, develops new nuclear weapons, and new-use doctrines against non-nuclear targets, and ends the negotiated arms-control process, then many will say that our Nation has, in fact, abandoned its commitment to, "pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament." This may encourage other nations to reconsider their commitments to the treaty. This would greatly complicate U.S. nonproliferation goals and President Bush's campaign against weapons of mass destruction.

For me, the single greatest disappointment in this study is its failure to break with cold war doctrines. The review advocates maintaining a substantial force of high-alert nuclear weapons for the indefinite future. This encourages other nations, particularly Russia, to construct larger forces than they otherwise would. It, therefore, increases the danger of nuclear-weapon accidents, miscalculations, and the threat of diversion of weapons into terrorist hands.

The most pernicious aspect of this review, however, is the great leap backward that it takes to the discredited nuclear policies of the 1950's. The review puts forward a nuclear weapon as simply another weapon, part of a continuum of military options merging seamlessly with advanced precision-guided munitions. The U.S. Army, the U.S. Navy, have long ago abandoned and dismantled

their nuclear artillery, landmines, bazookas, rockets, torpedoes, and depth charges conceived and developed in this earlier nuclear age. Most officers know, and Admiral Owens has testified to this just earlier, that we now have more than adequate conventional weapons alternatives for any conceivable mission.

As Secretary of State Colin Powell wrote in his biography, “No matter how small the payload, we would still be crossing a threshold if we were to use a nuclear weapon.” “Using nukes”—he wrote in his book, “My American Journey”—“at this point would mark one of the most significant political and military decisions since Hiroshima.” He was speaking then about tactical nuclear weapons used in Europe. I believe that observation is still valid today. If the United States were to use a tactical nuclear weapon, no matter how small, on an Arab or an Asian nation, it would still mark the most significant political and military decision that we have made since Hiroshima. The consequences would be enormous.

If the most powerful nation in the world—if the most powerful nation that the world has ever known—insists that it needs to use nuclear weapons to protect itself from chemical attack or to destroy an underground bunker, then why doesn’t any nation? Why doesn’t Iran need nuclear weapons? It, after all, has actually been attacked by chemical weapons. This is an extremely dangerous message to be sending to the rest of the world.

And the dreadnought analogy that we just heard from Dr. Weinberg is well-taken here. Why on earth would we go in this direction? When we’re at the peak of our power, why on earth would we be developing these other weapons, legitimizing their use, telling other nations, “Gentlemen, start your engines. If you’ve been thinking about going in this direction, go right ahead, ‘cause we’re going there”?

This is the most difficult part of this Nuclear Posture Review for me to understand unless you understand the nature of this review, its extremely limited base. Who did this review? If you ask the Army if they need a new artillery piece, you know what the answer is going to be. If you ask the nuclear laboratories and the nuclear military command structure if they need new nuclear weapons, you know what the answer is going to be. That’s why this is exactly the wrong way to do a review. You don’t ask the people who have the most vested interest in the systems to recommend what to do with those systems. You include them in the review. You want their experience. You want their understanding. You want their technical expertise. But you want to merge that with the expertise of a broader military and scientific spectrum.

So I would encourage the committee to do two things based on your review of this review. The first is to take Vice President Cheney at his word that this review is not extraordinary, that it’s just part of the normal routine of doing business, that these kinds of things are done every few years. He said that in London shortly after the report was leaked to the press. I think he was mistaken about that. We actually don’t do these reviews very often. But if he was articulating the desire of this administration to do it that way, let’s take him up on it. I think we should conduct a new review next year that includes a broader range of foreign-policy ex-

expertise, military expertise, and technical expertise to help us guide a more balanced nuclear posture for the 21st century.

In the short term, one of the greatest missing aspects of this review is its lack of threat assessment. What are the 2,000 nuclear weapons for? If you notice, in the earlier part of my statement, I said that the United States is going to maintain an arsenal of 10,000 nuclear weapons. Some may wonder what I'm talking about. I provided a chart at the end of my statement based on an analysis done by the Nuclear Resources Defense Council of what the U.S. nuclear arsenal will look like in 2012, at the end of the reduction process articulated by the President and the treaty that he will sign with President Putin in just a few days. The strategic nuclear weapons are just the tip of the nuclear iceberg. Beneath them are a thousand tactical nuclear weapons. Beneath them, thousands of warheads in storage. Beneath them, thousands of plutonium pits. And beneath that, tons of nuclear material.

One has to ask what these weapons are for, what exactly is the threat they're meant to deter? And this, I think, is one of the essential points of this posture review, although Secretary Rumsfeld states in his foreword to this review, that we have broken with cold war doctrine. In fact, the posture recommended by this review continues in place the systems, all of which were conceived, designed, and developed during the cold war, for one mission and only one mission, to deter and, if necessary, fight a global thermonuclear war with the Soviet Union. That mission is gone. The weapons remain.

Our relationship with Russia will truly change not when we no longer sign arms control agreements, but when we no longer maintain a force that targets thousands of Russian political, military, and industrial facilities. It's not the arms control treaties that are relics of the cold war. It's the nuclear weapons. As long as we have thousands of nuclear weapons, we will need to negotiate the fate of those weapons, the purpose of those weapons. There is no conceivable military utility for 2,000 strategic deployed nuclear weapons, except to attack Russia.

I would encourage the committee to ask the administration for a clarification. Is this, in fact, still the main justification for maintaining 2,000 high-alert deployed strategic weapons? If it is not, then what is, beyond uncertainty? That is no way to base a weapons system. You don't base it on uncertainty.

In my day, we always started off with a threat assessment. Here are the Soviet tanks. Here's how they'll come through the Fulda Gap. Here are tanks we need to stop them. Here's how much it's going to cost. Here's the foreign policy that will conform to that Defense policy. We've abandoned that, in a very disturbing trend, to go from threat-based assessments to capability-based assessments. That has the effect of justifying any system, any program that's politically attractive. It's no way to run a Defense Department. I think we have to get back to having concrete threat assessments on which we base our force structure and base our budgets.

I'll conclude with that, Mr. Chairman. I thank you for your patience.

[The prepared statement of Mr. Cirincione follows:]

PREPARED STATEMENT OF JOSEPH CIRINCIONE, DIRECTOR, NON-PROLIFERATION
PROJECT, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

A DEEPLY FLAWED REVIEW

Thank you, Chairman Biden, Senator Helms and Members of the Committee for the privilege of testifying before you today. I base my remarks today on the publicly available excerpts of the Nuclear Posture Review and on official and press comments on the review.

Summary

The Nuclear Posture Review conducted by the Department of Defense and submitted to Congress on 31 December 2001 is a deeply flawed document and if adopted as government policy could cause irreparable harm to the national security of the United States. Many of the recommendations in the review incrementally adapt policies begun in previous administrations. However, taken as a whole, the proposals represent a radical change in nuclear weapon policy totally disproportionate to the threat. The proposed policies could make the use of nuclear weapons by the United States or other nations more likely.

Adoption of the policies recommended in the review could be construed as a material breach of United States obligations under Article VI of the Non-Proliferation Treaty. If the United States maintains ten thousand nuclear warheads for the indefinite future, develops new nuclear weapons and new use doctrines against non-nuclear targets, and ends the negotiated arms control process, then many will say that our nation has abandoned its thirty-year commitment in the NPT "to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament." This may encourage other nations to reconsider their commitments to the treaty. This would greatly complicate U.S. non-proliferation goals and President Bush's campaign against weapons of mass destruction.

The greatest disappointment in the study is its failure to break with Cold War doctrines. The review advocates maintaining a substantial force of high-alert nuclear weapons for the indefinite future. This encourages other nations, particularly Russia, to maintain or construct larger forces than they otherwise would. It therefore increases the danger of nuclear weapon accidents, miscalculations and theft or diversion of weapons into terrorist hands.

In a great leap backward to the discredited nuclear policies of the 1950s, the review sees nuclear weapons as simply another weapon, part of a continuum of military options merging seamlessly with advanced precision-guided munitions. The U.S. Army and Navy have long since dismantled their nuclear artillery, landmines, bazookas, rockets, torpedoes and depth charges conceived and developed in this earlier nuclear age. Most officers know that we now have adequate conventional weapon alternatives and, as Secretary of State Colin Powell wrote in his biography of tactical nuclear weapons use in Europe, "No matter how small these nuclear payloads were, we would be crossing a threshold. Using nukes at this point would mark one of the most significant political and military decisions since Hiroshima."

Unfortunately, the Nuclear Posture Review does not, as Secretary of Defense Donald Rumsfeld asserts in his foreword to the review, put "the Cold War practices related to planning for strategic force behind us." There is a severe disconnect between the expressed policy goals of the Administration and the proposed operational force structure.

The secretary claims that "as a result of this review, the U.S. will no longer plan, size or sustain its forces as though Russia presented merely a smaller version of the threat posed by the former Soviet Union." The Secretary may believe this to be true—and it would be consistent with the expressed aim of the president—but the force structure detailed in the review remains configured for large-scale, counter-force attacks against a broad array of targets in Russia.

There is no strategic justification for maintaining thousands of weapons on high alert and a reserve force of thousands more weapons ready for re-deployment other than to target Russia. Other target sets are added on to, not substituted for, the Russian targets. The real mark of a new relationship with Russia will not be when we no longer sign arms control agreements, but when we no longer maintain elaborate plans to target and destroy Russian military, political and industrial sites—and when Russia no longer does the same for U.S. targets.

The Nuclear Posture Review and the new treaty that President Bush will sign shortly with President Putin, will unfortunately not "liquidate the legacy of the Cold War," as the president has said. The review and the treaty do not liquidate any weapons. Ten years from now, when the treaty expires, the large deployed nuclear forces we inherited from the Cold War will still be very much with us. The posture

review perpetuates this Cold War posture. As these systems—conceived, designed and built to deter or wage global thermonuclear war with the Soviet Union—reach the end of their operational lives, the review calls for the production of a new generation of missiles, bombers and submarines.

Rather than breaking with Cold War rationales for the size and purpose of the nuclear force, the review leaves them in place, downsizing and rationalizing the force, and adds in new nuclear missions. The review basically carries forward nuclear reductions already planned for and approved by the Joint Chiefs of Staff under the START I and START II treaties and announced as the goals of the START III treaty in 1997. In addition, the review expressly advocates the use of nuclear weapons against non-nuclear targets in states that do not possess nuclear weapons, such as Syria and Libya.

The review, in summary:

- Validates the reductions agreed upon by the United States and Russia in 1997;
- Advocates a new generation of strategic nuclear weapons for the next 50 years;
- Advocates new designs for new types of nuclear weapons;
- Advocates new uses for nuclear weapons;
- Brings the country closer to testing new nuclear weapon designs; and
- Increases dramatically the funding for and capacity of nuclear weapon production facilities.

Taken together these represent a dangerous affirmation of the military utility and necessity of nuclear weapon in conflicts large and small. It sends a dangerous message to other nations contemplating development of nuclear weapons. If the most powerful nation in the world says it needs nuclear weapons to defend against chemical weapon attacks or to attack underground bunkers, why don't other nations?

The Committee should consider working with the administration to conduct a new review next year, but one that involves a broader range of military and strategic thinkers. The nation can never be assured that we have received the best, most objective review until those representing a broad range of American national security and foreign policy expertise perform these reviews from the top down, not from the bottom-up.

Continuity and Change in the U.S. Nuclear Force

The United States is the most advanced nuclear-weapon state in the world. It maintains a diverse arsenal of strategic and tactical nuclear weapons, as well as large stocks of weapons-grade nuclear materials. After reaching a high point in the mid-1980s, the U.S. nuclear arsenal has been shrinking as part of a negotiated arms reduction process with the Soviet Union and, its successor, Russia.

The Nuclear Posture Review outlines plans to continue the reductions in strategic forces, continue efforts to develop missile defenses and begin the development of new, low-yield nuclear weapons. The initial warhead reductions follow those planned during the Clinton administration. By 2007, the Bush administration plans to reduce down to approximately 3800 operationally deployed strategic warheads, as did the previous administration. This will include reductions of 500 warheads from the 50 *Peacekeeper* ICBMs, 800 from the 96 missiles carried on four Trident submarines that will be converted to carry conventional cruise missiles, and 1,000 from the removal of two warheads from each of 500 *Minuteman III* ICBMs, as called for under the terms of the 1993 START II treaty.

The review preserves and continues the majority of the current operationally deployed nuclear force. Aside from the *Peacekeeper* ICBM and the four Trident SSBNs, no additional strategic delivery platforms are scheduled to be eliminated from strategic service.

By 2012, the administration plans to field 1,700 to 2,200 operationally deployed strategic warheads. This represents a slower pace of reduction than envisioned by the previous administration. In 1997, the United States and Russia agreed on a reduction goal of 2,000 to 2,500 deployed strategic warheads by the end of 2007. The lower number proposed by the Bush administration is derived by no longer counting warheads on submarines or bombers in overhaul as “operationally deployed.” Two Trident submarines, with 192 warheads each, are usually in overhaul at any given time, as are several bombers with dozens of weapons, thus allowing lower numbers without changing existing nuclear force plans. (The number of warheads on each Trident missile will decrease over the next 10 years.)

The warheads will be deployed on:

- 14 *Trident* SSBNs,
- 500 *Minuteman III* ICBMs,
- 76 B-52H bombers, and

- 21 B-2 bombers.

Some warheads removed from delivery vehicles will be dismantled, but the majority will be maintained in the active stockpile for potential return to delivery systems on short notice (weeks or months). This “responsive force” of stored warheads could be redeployed, should strategic conditions change. There are almost 8,000 warheads in the active stockpile today, stored apart from delivery vehicles but maintained in a ready-for-use configuration with tritium and other limited life components installed. There is also an inactive stockpile of warheads that do not have limited life components installed, and may not have the latest warhead modifications. These warheads are kept as possible replacements for active warheads and as a “hedge” against the discovery of a problem with a large number of active warheads.

The exact size of the future active stockpile or responsive force has not yet been decided but it would apparently number in the thousands. These are needed, according to the review, to augment the operational deployed force to meet potential contingencies. The potential contingencies are categorized as “immediate, potential or unexpected.” The review identifies specific countries that could be involved in these nuclear contingencies, including Russia, China, North Korea, Iraq, Iran, Syria, and Libya.

The Missing Threat Assessment

One of the goals of the proposed START III treaty, however, had been to require warhead dismantlements to make future reductions transparent and irreversible. It appears this is no longer a U.S. goal. The review does not explain why thousands of deployed nuclear weapons, augmented by thousands of additional nuclear weapons in reserve, would be needed to respond to a military engagement with Syria or Libya or any of the other nations. The lack of any concrete threat assessment is a glaring weakness in the review. The review picks up a disturbing trend in other defense department programs—to abandon a “threat-based” planning in favor of “capabilities-based” planning. This essentially allows for the development of any size force or any weapon system that is politically attractive, whether or not the threat justifies these capabilities.

Russia is Still the Target

The sole justification for maintaining a large, dispersed force of nuclear weapons on high alert has always been and remains the need to target military, industrial and political sites in Russia. The Committee should ask the administration to clarify this matter. If Russia is not still the target of U.S. nuclear plans, then what is the rationale for the large size of the force? If Russia still is the targeted, then would negotiations for deeper reductions in Russian nuclear weapons, such as those offered by President Putin, allow the United States to further reduce its forces, saving funds for other, more pressing military needs?

In the most authoritative public statement on the rationale for maintaining large numbers of deployed forces configured as they were during the Cold War, then-commander-in-chief of the Strategic Command, Admiral Richard Meis, argued in July 2001 that burden of proof fell on those who advocate reductions to demonstrate exactly how and why such cuts would serve to enhance U.S. security. “There is a tyranny in very deep numerical reductions that inhibits flexibility and induces instability in certain situations,” he said. “We must preserve sufficient deterrent capability to respond to future challenges, to provide a cushion against imperfect intelligence and surprises, and to preserve a reconstitution capability as a hedge against unwelcome political or strategic developments.”

Maintaining and Modernizing the Current Force

These views apparently prevailed in the Nuclear Posture Review. The Defense Department concluded that there will be a need to maintain thousands of deployed nuclear weapons in a triad of bombers, submarines and land-based missiles for the indefinite future. The diversity is required to “complicate any adversary’s offensive and defense planning calculations while simultaneously providing protection against the failure of a single leg of the triad,” according to Mies.

Admiral Mies does not mention Russia by name, but Russia is the only country that has the potential, if not the desire, to launch a sudden, large nuclear attack on the United States. Thus, U.S. forces must remain capable of withstanding a first-strike and responding after the attack with an overwhelming and devastating nuclear counter-attack.

Meis explained:

- “Intercontinental ballistic missile continue to provide a reliable, low cost, prompt response capability with a high readiness rate. They also promote sta-

bility by ensuring that a potential adversary takes their geographically dispersed capabilities into account if contemplating a disarming first strike . . .

- “[T]he strategic submarine force is the most survivable leg of the triad, providing the United States with a powerful, assured response capability against any adversary . . . The United States must preserve a sufficiently large strategic nuclear submarine force to enable two-ocean operations with sufficient assets to ensure an at-sea response force capable of deterring any adversary in a crisis . . .
- “Strategic bombers . . . allow force dispersal to improve survivability and aircraft recall during mission execution. The low-observable technology of the B-2 bomber enables it to penetrate heavily defended areas and hold high-value targets at risk deep inside an adversary’s territory . . . the B-52 bomber can be employed in a standoff role using long-range cruise missile to attack from outside enemy air defenses.”

As current forces reach the end of their operation lives, a new generation of systems would be built to replace them. The posture review calls for the development of a new ICBM to be operational in 2018, a new strategic submarine and a new submarine-launched ballistic missile (SLBM) to be operational in 2029, and a new heavy bomber to be deployed in 2040. This recommendation is strongly endorsed by the current commander-in-chief of the Strategic Command, Admiral James Ellis, in his February 2002 testimony to the Senate Armed Service Committee:

The first finding [of the Nuclear Posture review] I’d like to highlight is the recognition of a pressing need for investment across the full range of our strategic capabilities. As we work to reduce deployed strategic nuclear warheads, this investment is needed to sustain and improve our aging operating forces, to recapitalize our infrastructure, which has atrophied over the last ten years, and to refine and enhance current systems.

Expanded Nuclear Production

The review details plans to expand the capacity and capability of the Pantex Plant in Texas to meet the planned workload of some 600 warheads (assembled or dismantled) per year, up from the current capability of 350 warheads per year.

The review also notes plans to expand the capacity and capability of the Y-12 Plant in Tennessee to meet the planned workload for replacing warhead secondaries, and other uranium components. It further argues for the new modern production facility to deal with the large-scale replacement of components and new production of plutonium “pits.”

New Weapon Designs

As a result of the review, the Department of Energy’s National Nuclear Security Administrations (NNSA) will undertake several initiatives in the design and development of new nuclear weapons. The NNSA will reestablish advanced warhead concepts teams at each of the national laboratories and at the headquarters in Washington to explore options including:

- possible modifications to existing weapons to provide additional yield flexibility in the stockpile;
- improved earth penetrating weapons to target hardened and under ground facilities;
- low-yield warheads that reduce collateral damage.

Preparing to Restart Nuclear Testing

To test some of these designs, the review also recommends shortening the time required to restart nuclear testing. Currently it would take an estimated 2 to 3 years to resume underground testing of nuclear weapons after a decision to do so. The posture review finds this unacceptable. Shortening the time needed to test, the review argues, will enable the United States to initiate research into whether there is a need to develop an entirely new capability—one that is not a modification of an existing weapon—in time to counter any surprise development. The review says this will also better guard against any problems that might develop in existing warheads. The study recommends substantial funding increases for the nuclear laboratories to enhance test readiness, train new and existing personnel, conduct new field experiments and a variety of other projects it terms urgent.

Negative Impact on Non-Proliferation Efforts

Taken together as a whole, the steps called for in the Nuclear Posture Review make the use of nuclear weapons by the United States more likely, even in response to non-nuclear threats or attacks. The review states that the United States must

rely on nuclear weapons to deter and respond to threats from weapons of mass destruction, defined in the review to include not only nuclear weapons, but chemical and biological weapons, and even conventional explosives.

Within the new nuclear use policy, there are few if any military contingencies that might not allow the United States to respond with nuclear weapons. This policy raises concerns that, by threatening the use of nuclear weapons, even against conventionally armed adversaries, we would actually increase the incentive for states to acquire nuclear weapons, if for no other reason than to deter the use of such weapons by the United States.

Another more subtle, but equally important development in the review is the closer integration of conventional and nuclear force planning. The review argues that by more closely linking intelligence, communication and force operational planning for nuclear and conventional operations, that conventional forces can more easily replace operations previously limited to nuclear options, making the use of nuclear weapons less likely. It is possible, however, that this linking of operational capabilities will also work in the reverse, making it easier to target and use nuclear weapons in missions previously reserved for conventional missions.

These changes to operational integration, in combination with more direct planning to consider the use of nuclear weapons against states including China, North Korea, Iraq, Iran, Syria, Libya and others, reverses the trend of de-emphasizing nuclear weapons and could make the use of nuclear weapons far more likely and actually encourage, not discourage, the acquisition of nuclear weapons by additional states.

It remains to be seen what affect, if any, the views of the active military will have on these policies. Traditionally, the uniformed military in the United States has widely resisted anything that would counteract the traditional conventional superiority of the United States, or that might complicate military planning by forcing troops to operate in contaminated battlefields (i.e., chemical or biological weapons or radiation). These concerns have been driving factors in the development in the United States of advanced conventional capabilities as opposed to modern, battle-field nuclear weapons. It is possible that the process of integrating the top down directives of the review will be difficult and that the position of the uniformed military may lead to further modification of these policies.

When the review became public in March 2002, senior administration officials downplayed the significance of the review. Vice President Dick Cheney said in London that it was a routine review of the type done every few years. The Committee should consider working with the administration to conduct a new review next year, but one that involves a broader range of military and strategic thinkers.

Reviews performed by those with a vested interest in the forces and requirements under review will inevitably recommend preserving and expanding those forces and increasing funding for their programs. The nation can never be assured that we have received the best, most objective review until those representing a broad range of American national security and foreign policy expertise perform these reviews from the top down.

UNITED STATES NUCLEAR WEAPONS, FROM 2012

<i>Category</i>	<i>Number of Warheads</i>
Operationally deployed force	1,700-2,200
Missile warheads on 2 Trident Submarines in overhaul	~240
Strategic missile and bomber warheads in responsive force	~1,350
Non-strategic bombs assigned to U.S./NATO conventional/nuclear capable aircraft	~800
Non-strategic sea-launched cruise missile warheads retained in the responsive force	~320
Spare strategic and non-strategic warheads	~160
Intact warheads in the inactive reserve force	~4,900
Sub-Total Intact Warheads	9,470-9,970
Stored plutonium and HEU components that could be reassembled into weapons	5,000
Total of All Warheads and Components	14,470-14,970

Source: Natural Resources Defense Council "Faking Nuclear Restraint" 13 February 2002, analysis of the Nuclear Posture Review.

The CHAIRMAN. Well, I thank you all for your input.

Let me start with you, Dr. Thompson, if I may. The thing that—I was somewhat facetious—I was looking for reassurance in your statement, and you state that there are no new nukes that are planned or on the horizon. And so let me ask you the question this way. Do you think there is any need or justification now for planning for new nuclear weapons, whether it's an earth-penetrating nuclear weapon or any other?

Dr. THOMPSON. It depends on how you mean “now,” Senator. At this particular moment in time, no. However, the problem is that if you look at the recent past, not far beyond the beginning of my own life, and you just look at the number of events that have occurred: Pearl Harbor, North Korea's invasion of the South, the Tet offensive, the Beirut barracks bombing, the collapse of communism, September 11—we've got an awful track record on predicting the future. And I might mention parenthetically that also shows we've got an awful track record on deterrence. So, given that, it's easy for me to imagine that we will need to conduct serious planning and maybe even design work 5 years down the road even though I don't know what the stimulus for that activity would be.

But the reason I know that we don't have any plan at present to develop a new nuclear warhead is because we don't have the capacity to build one. We've lost the ability to design and build new plutonium pits at Rocky Flats. It would take 10 years to reconstitute that. We haven't built—we haven't manufactured tritium in the United States since 1988, without which you can't do a fusion reaction. And, just in general, we've got a very decrepit and fragile nuclear industrial base.

So when we say that we're developing a warhead that is designed to be a deeply buried bunker penetrator, what we're really talking about is taking a fairly old warhead and putting it inside a new casing. That's all this is about.

The CHAIRMAN. Do you agree with that, Dr. Weinberg? Did you happen to hear the answer?

Dr. WEINBERG. The problem with having a deep earth-penetrating nuclear weapon wouldn't be solved if we could develop a new kind of warhead. The problem is simply that you can't get down deep enough into the earth to avoid a tremendous amount of fallout, and that has nothing to do with whether we have the capability of starting up nuclear-weapon production lines. So I think it's an irrelevant point.

If I can expand on that, Loren Thompson's testimony is a very good example of something I've heard again and again: How can you tell what we will need in the future? Dr. Thompson said, “How do you know that we will not need to increase our deterrent over what we have? It's not a question of physics. It's a question of judgment.” He's right. It's not a question of physics. It is a question of judgment.

Maybe what we need is not to sign this treaty at all, but to maintain the 6,000 operationally deployed weapons we have now. How do you know that we won't need them in the future? Perhaps we are making a terrible mistake.

The fact is, we never know. As Joe Cirincione said, we have to think about actual threats. I cannot conceive any threat—maybe

I'm wrong, but I can't conceive any threat that would require the kind of forces that we will have at the end of the 10-year period that's called for in the treaty.

On the other hand, I can conceive of lots of threats which will be exacerbated by the large size of that force. We've been over them—mistaken launch, diversion of weapons to terrorists, bad example to other countries, possibly starting nuclear programs in other countries.

And I can just as well say to you, "How do you know that this won't happen?" Where does the principle come from that when you face uncertainty, you always vote on the side of new weapons or maintaining existing weapons? I mean, what is the theorem there that says that uncertainty is always met by maximizing your force? It may not be. It's not a question of physics. You're quite right. It's a question of judgment.

Dr. THOMPSON. May I respond?

The CHAIRMAN. Please.

Dr. THOMPSON. I think it's kind of an exaggeration to say that we are erring on the side of always maintaining our capabilities. When we started the START negotiations two decades ago, we had over 10,000 weapons. Today we have less than 6,000. The plan is to go to less than 4,000 in 5 years. The plan was to go, quite possibly, below 2,000. Now, it might—

The CHAIRMAN. But how can we afford to do that?

Dr. THOMPSON [continuing]. Be I'm superficial, but I see a pattern here.

The CHAIRMAN. But—

Dr. THOMPSON. This is a big reduction.

The CHAIRMAN [continuing]. Is it a good pattern or a bad pattern?

Dr. THOMPSON. I think the debate here is over the rate at which the pattern is unfolding. But, I mean, how can you dispute that the number of weapons is declining?

The CHAIRMAN. Well, no, let's assume—obviously, it is. But the question is: Is that a good pattern or a bad pattern? Go to the theorem that Dr. Weinberg said. I mean, what is—what makes you feel secure that we can go from ten to four or two in light of your point about Tet, Beirut, et cetera?

Dr. THOMPSON. Well, in fact, the Nuclear Posture Review is only semi-secure in that judgment. It says that, between now and 2012, we will pause periodically, take a look around and decide whether we want to go down that additional increment. Because here's where we end up at the end of this process. As I said, the bombers are all off doing something else on a typical day. They're not on strip alert with nukes in them. We've reduced our Minuteman force from—well, today we've got about, what, 2,000 warheads in the ICBM force. We're down to 500, at most, that are on alert. And we're down to perhaps 8 submarines at sea on a given day, because there'll be 14 subs. Two are in overhaul. A third of the remainder are in port. So that's 8 subs and less than 500 ICBMs.

Now, that would have been a wholly inadequate deterrent 20 years ago. I don't understand why it's so hard to imagine needing more than that, when 20 years ago we were pretty certain we needed more than that.

The CHAIRMAN. Well, 20 years ago, there was a different world, but let me ask you what—we don't know what threats we'll face in the future. You have heard Dr. Weinberg and Joe articulate what they thought some of the downsides were from maintaining this arsenal and from the Nuclear Posture Review, as they read it. Now, again, they may very well be wrong, but they've outlined the threats they think that flow from this Nuclear Posture Review and the tack being taken now relative to arms control. What are threats—and can you be as specific—the threats that you envision as possibly occurring in 2, 5, 10 years that would warrant us needing 7,000 nuclear warheads again—or 4,000 or 5,000?

Dr. THOMPSON. Well, I'm—within the timeframe you mentioned, 7,000 probably wouldn't be required; but more than 2,000 in the operational force, I can readily imagine because the preponderance of those warheads would be on a handful of submarines. If we determine that an adversary had acquired the capability to track those submarines, we might feel that we needed to proliferate the number of boats that were carrying the deterrent. We might not even need more warheads. We might need more ballistic-missile submarines, for example. Those are the kind of standard concerns that people talked about for two generations during the cold war.

The CHAIRMAN. But tell me some of the other things that can—and I'm not being facetious here. I'm just trying to—what I hear from those who are concerned about their view of the direction we're now going, as opposed to those who think the direction we're moving now is prudent, are specific delineated concerns that may or may not be correct—i.e., we nuclear test; the Chinese, who have great pressure on them now not to nuclear test—they may anyway—but will have a green light to go ahead and do something that is—all things being equal, would not be in our interest for them to be able to test new systems. The concern about accidental launches, all the concerns that have been enunciated—I'm not asking you to suggest why you think they aren't legitimate concerns. I'm asking you to articulate some of the concerns that lead you to believe that the need to test should be—for us to test—should be readily available to us, and, two, the need to maintain significantly more than 2,000 warheads, deployed or not, is necessary, et cetera, et cetera.

You gave me one, the idea that SLBMs would find themselves in a position where technology would be acquired by other states to be able to track them. What are some of the other, you know, scenarios that have, I assume, the prospect of an advent of Chinese breakout with a larger nuclear capability. What are some of the other ones?

Dr. THOMPSON. Clearly, one possibility—you know, the problem with speculating on specifics, Senator, is it's—remember there was a South African labor lawyer who said once that, "Every revolution is impossible until it happens; and after that, it's inevitable." Things that look so obvious in retrospect, like September 11, would have sounded ludicrous to propose before the event.

The CHAIRMAN. But it didn't sound ludicrous. A lot of us were saying it. I made a speech on September 10 specifically delineating what I thought was going to happen. A lot of people thought that. It wasn't ludicrous. There were a lot of people. We did not carry

the day. We did not—just like there’s a lot of people, like Senator Lugar, who are speculating that there is an overwhelming prospect that terrorists will gain access to certain materials to allow them to buy—or to build a dirty nuke and/or—I mean, a radiological weapon and/or a 1- or 2-kiloton nuclear device that they could build.

So the truth is, there was speculation on every one of the things you’ve suggested. Now, it wasn’t the preponderance of the view. It wasn’t one of those things—but nothing came out of the blue. And as we’re finding out—and I’m fearful, and I hope to God it’s not—it doesn’t happen, but I’m fearful, as we review the intelligence data we had, we’re going to find out that we knew a helluva lot more than we do.

Dr. THOMPSON. I have the same concern.

The CHAIRMAN. And I am worried about that. I mean that sincerely. I pray to God that that’s not the case, because the President will be seriously crippled if that turns out to be the case, in his judgment. And it’s not his—I mean, I’m just very worried about it. I pray to God that we find out that we didn’t know.

Dr. THOMPSON. Senator, I have the same concern. But the reason I’m avoiding giving you particulars is because so many of these threats that actually are going to happen are—would sound quite implausible today.

You know, when the French held their victory march of the Arc de Triomphe in 1919, it was unbelievable that Germany would be back in a generation. But it’s really quite possible that Russia could be back in a generation, because they’ve been there before.

The CHAIRMAN. See, look, I’m not suggesting—the reason why I’m looking—I am not nearly—as much as I’ve tried for 30 years on this particular subject to come as close as a lawyer can come to mastering the intricacies of strategic doctrine—and I have tried my best. I have had your colleagues, Dr. Weinberg, sit with me for hours, literally explaining to me what makes it go boom, how you construct a nuclear weapon, because I learned a long time ago—

I’ll never forget. I was in a debate with Russell Long on the issue relating to price controls relating to energy. And the issue was about stripper wells. And I got on the floor with Russell Long, and I was debating him on this issue as to why—and to make a long story short, I was carrying the debate. And all of a sudden, he looked at me and said, “Does my friend from Delaware understand how a stripper well works?”

And I thought, “Holy God.”

“Holy God.” And he said, “Well, does my friend understand that it’s *x*-feet deep and—*x*-thousand feet, and that you have to run a separate shaft, and you have to put in high pressure steam, da-dah, da-dah, da-dah.” And it had nothing to do with my point, but everybody on the floor knew I didn’t know anything about a stripper well, and he won the debate.

Well, I’ve tried very hard to educate myself through my staff and the scientists that I’ve hired and the scientists I’ve availed myself of to understand this. But nonetheless, as a policymaker—that’s an exaggeration. I’m just a Senator, and I’m not being facetious when I say that. We don’t make foreign policy, but we can impact on

what American foreign policy is, and we can impact on the margins of what defense policy is.

And so, as I try to figure these things out, I approach this maybe too much as a lawyer, constructing syllogisms that hopefully are able to be borne out. And in order to be able to do that, I, on the one side of the equation here—I don't want to mix my metaphors here—but on the one side, I look at what are the articulated downsides to a particular course of action and what the threat assessments are relative—and from one perspective—and whether or not what we're doing enhances or diminishes our security. And I find specific concerns articulated by, in this debate—I don't mean just the four of us—but in this debate, specific in terms articulated about proliferation, about stability, about access to—not third-world nations, but to third parties—and so on. And then I go over on the other side of the equation, and I get from my friends on—for lack of a better phrase, the center-righter—the Rumsfeld school, for lack of a better phrase, and I hear, “We just don't know. We just don't know.” And that's a little bit like my saying to my daughter, “You can't go out.” And she says, “Why?” “You just never know.”

And she looks at me and goes, “OK, right, Dad. Now, let me explain to you why it's OK to go out to this party.” “But, honey, you just don't know.”

I know that sounds like I'm trying to be facetious. I'm not. And so it's very helpful—you know, this notion about the Russians coming back, I don't doubt that possibility. Germany came back. OK, let's say that's true. I don't know anybody in the world who is mildly informed—and in foreign policy, I am informed—I don't know anybody in the world who thinks there's any possibility of that happening in the next decade. I don't know of a single solitary human being who suggests that. None.

I always say this at meetings—I say, “Tell me. Give me a scenario how a country with a \$7.5 billion defense budget with a \$30 billion total budget for the entire nation, and with the economic circumstances they find themselves in, the places in the world they're situated at this moment, the direction things are going, that within the 10-years the bear is back.” Maybe the bear is back in 30 years.

Dr. THOMPSON. Senator, that sounds like a pretty desperate country. It's easy to imagining a desperate country doing irrational or desperate things.

The CHAIRMAN. I can understand them doing irrational things, but it plays into the point my friends on the panel are saying, which is that desperate countries hang onto what they have now, and maybe desperate countries do things that have nothing to do with anything other than using systems they now have, as opposed to—

Dr. THOMPSON. Senator, if I could make a broader point that speaks—

The CHAIRMAN. Please.

Dr. THOMPSON [continuing]. Nonetheless directly to what you're saying, I find that I have a problem on the same issue across the board in discussing any military modernization initiative we undertake. If I take, for example, the F-22 fighter, people will tell me,

“Well, the air-to-air threat is gone. Where is it going to come from? Why do we need it?” The problem is, we simply can’t know.

Now, your friends, as you put them on the panel, are describing our concerns today. And our concerns today certainly would dictate that we could have a much lower nuclear force. But the concerns at the Washington Naval Conference aren’t the concerns the Navy had 20 years later, and none of us can foresee what those concerns would be.

So I’m in favor of the administration’s policy of going down, looking around, going down again, if it seems prudent. We may very well go below 2,000 after a decade, depending on the world’s situation. But this notion that we don’t need a reserve when we lack the capacity to build new ones or that we should simply start cutting immediately today at a much more rapid rate, I don’t think it’s prudent.

The CHAIRMAN. OK. Doctor, you had a comment.

Dr. WEINBERG. I’d like to clarify one thing that is obvious, but at this point I think may need to be said, and that is that no one is proposing that the United States cut to the levels called for, say, by the National Academy of Sciences, a thousand weapons of all kinds, deployed or not deployed, or by the other organizations, the Union of Concerned Scientists, the Federation of American Scientists, and so on, that call for similar stringent cuts, just because we want to save money, or because we think it’s nice to have a smaller arsenal. All of this is in the context of a comparable cut by the Russians. Yes, the bear may come back. And wouldn’t it be nice if, when the bear came back, the bear had a few hundred nuclear weapons, and we had a few hundred nuclear weapons, rather than a few thousand on each side. Wouldn’t that be a better world if the bear came back?

Dr. THOMPSON. Maybe.

Dr. WEINBERG. Oh, maybe? Well, I find it hard to imagine any circumstance in which that wouldn’t be better. You have to think about what other countries will do. And in this case, it’s obvious. We’re talking about mutual cuts. Yes, I agree, we couldn’t justify a reduction to a thousand nuclear weapons during the height of the cold war because of the size of the Russian forces. The big thing that’s changed is, now we have a Russia that has much smaller forces and which is eager to reduce them even more. So why not seize this golden opportunity to make much more stringent cuts?

Dr. THOMPSON. I think Dr. Weinberg has just given an excellent example of what the administration is concerned about. Let’s imagine, for the sake of argument, that we were down to a few hundred. All right?

The CHAIRMAN. And the Russians down to a few hundred?

Dr. THOMPSON. Exactly. You know, when we’ve got 6,000, and they’ve got 6,000, if they hide a few hundred, it’s no big deal. But when you get down to a hundred, and they have a hundred, and they’ve hidden a few hundred, that’s a major strategic advantage. That, in essence, is what their concern is. It’s a concern that by the time you realize the other guy isn’t playing by your rules, if you’re low enough, you may have lost.

The CHAIRMAN. Well, I think that’s a very good point, and that’s why I’m always surprised by their unwillingness to have more

stringent verification requirements. But that's a different issue, I realize.

There's so many more things that I want to raise with you all. Let me just conclude by asking the following and ask you all three to comment if you wish to, or, if none of you want to comment, it's OK—express the concern of a non-scientist 30-year Senator—a Senator who's been here for 30 years. I am less concerned personally about—assuming we continue to have some prudent and sound responses to what appears to me be at least the present leadership of Russia's desire to look West. I mean, not since Peter the Great has any Russian leader cast his lot with the West as clearly as this guy has. Now, whether or not he can sustain it, whether or not he—we do anything to help or hurt him in doing that is another question.

But I am more concerned that our actions, well-intended, may very well put China in a position where China concludes that its own interests dictate that it fundamentally alter its strategic doctrine in a way of consequence. And so could you all just speak to me for a second, if you feel that it warrants it, a little bit about how China fits into this equation?

We're talking about Russia, and we have outlined the essence of our disagreement about whether the bear comes back and how and under what circumstance, if it does come back, we'd rather have it. But speak to me about China for a moment.

And last, about in what is increasingly a circumstance of diminished—"diminished" is the wrong word—limited—more limited resources available for what we're all talking about, because of—whatever the reason. I don't want to get into a domestic debate, but there is less money in the near term. In the next 10 years, there is less disposable income the Federal Government will have available to us as the consequences of actions we've taken and circumstances that have occurred than we would presumably would have available to us and were projected a year ago. And so I'm not getting into a Democrat/Republican—just everybody acknowledges we're not talking about surpluses of—in the \$5 trillion area. We're talking about surpluses a lot less, OK? So that is going to put increased pressure on domestic budgets, and that's going to put increased pressure, as we all know, on military budgets, because right now, in the aftermath of 9/11, there is this willingness instinctively on the part of the American public to say, "Yup, you know, whatever it takes, we will do." But, God willing, and there's not another 9/11 for another couple of years, or—and hopefully forever, but you'll find that the willingness of the public to give up prescription drugs and eat into Social Security and the rest is going to change dramatically, I predict.

Now, so my generic question is twofold. One, what about China? And does what we're about to do, the Nuclear Posture Review, as it is, we think, as has been discussed—does that diminish or increase the probability that China would do something different than they might otherwise do, relative to their nuclear arsenal and their strategic doctrine? And then maybe they're all going to do everything anyway, so it doesn't matter. I just want to talk about that a second.

And, second, in terms of what we look down the road and see the needs—I would argue, by the way, if I were going to make the argument you’re making, Dr. Thompson, that one of the strongest reasons to keep this reserve is, at the end of the day it’s going to be harder to find the money to do what we may have to do if, in fact, there’s a breakout in other ways, other places.

But that leads me to the question of—in terms of the allocation of dollars over the next decade, does it make sense for us to be putting an increasingly larger share in the national missile defense system, not—as opposed to in other defense needs that we see down the road?

So could you just—that’s like a seminar question to ask you both of those, but if you’re inclined, would any of you be willing to comment on those two areas?

Mr. CIRINCIONE. Perhaps I could start. I was just in China for a conference a few weeks ago, and I was struck by how much less concerned the Chinese are about U.S. plans to deploy national missile defense, or missile defenses. And how increasingly concerned they are about this issue of weaponization of space, which has moved to the top of their agenda. I think it relates specifically to the Nuclear Posture Review.

Let me just describe these two things very quickly. I believe one of the reasons that the President was able to withdraw from the ABM Treaty without triggering an international wave of criticism, in addition to the fact that we’re the most powerful nation in the world and nobody wants to pick a fight with us—in addition to the fact that he made the decision while we’re at war, and none of our allies were going to criticize us during that critical juncture, in addition to the fact that he got Russian agreement to do this—and, as one of my French colleagues said, “We couldn’t be more Russian than the Russians”—I think it’s the realization that the Russians and the Chinese and many of our allies now have: while we may have a world without the ABM Treaty, we probably are also going to have a world without effective missile defenses. They’ve come to the realization, as the President himself has, that we don’t actually have a ready-to-go missile defense system to deploy that would have an appreciable effect on regional or global stability. If you look out over the next 8 years, what we’re talking about is a few silos in Alaska, some improvements to the Patriot system—

The CHAIRMAN. It can’t have any impact on Korea, by the way, but that’s another interesting point.

Mr. CIRINCIONE. There isn’t going to be a sudden breakout of missile defense systems on Aegis cruisers and destroyers. The Navy area-wide program has, in fact, been canceled, the near-term program, and the theater-wide program is at least a decade away. There isn’t going to be the rapid deployment of THAAD missile batteries. That program is also a decade away. There aren’t any space-based weapons ready to go. Air-based weapons are in a long development process.

So what we’re looking at, and what they’re looking at, is a slow deployment of some rudimentary capacities that won’t appreciably affect them militarily. So they’re less concerned. They don’t like the treaty withdrawal. They think it has wide-ranging implication for

how countries think about treaties, but they're less concerned about the military impact.

They are concerned by the impressive show that the United States has put on most recently in Afghanistan and the huge technological leap that we have in command, control, communications, and precision-guided munitions, and they are fearful of what that means if we're serious about our stated goal to seize the high ground, to dominate space across the full spectrum of capabilities. They're fearful of what that means for their ability to communicate, to see, to have timely intelligence.

And when you marry that up with the Nuclear Posture Review that calls for new designs and new development and justifies the use of nuclear weapons in non-nuclear situations, they're concerned that the United States might use its advantage, not this year or next year, but in the decades to come to force China to go along with U.S. decisions that it might otherwise resist. And this may cause China to increase its nuclear force more than they otherwise would.

They have a very minimal nuclear force at this point. They have only 20 ICBMs that could reach the United States. They have only 20 intermediate-range missiles that can reach Russia, for example, a very small nuclear force that numbers around 400 warheads total. There has been a debate inside China about where resources should go, just as there is in this country. That debate has been decided against a significant modernization of the force, although some is underway. It's been underway for decades now. This may encourage them to increase the size of the force that they would otherwise deploy. And it was particularly true in the area of tactical nuclear weapons. If the United States is considering mating a precision-guided munition with a small tactical warhead, well, perhaps China should go down that route, as well.

The United States is now concerned about very low-yield tactical weapons, ones that would minimize collateral damage. But if you don't have that concern, and if the United States is saying it's OK to do this, then perhaps China would consider using a small, but still very large, nuclear weapon on some of its missile batteries that are now assembled across the Strait of Taiwan. It would make elimination of Taiwanese air fields and communication facilities much easier for them to accomplish. We don't believe any of those missiles are nuclear armed at this point. So that is some of the dilemmas you get into as you make the world safe for nuclear-weapons use.

Let me say one other thing, and then I'll stop. You asked a question earlier on, "Are we undertaking new designs?" The answer is yes, we are. And if you read the Nuclear Posture Review, it says that, as a direct result of this review, the Department of Energy's National Nuclear Security Administration has undertaken several initiatives, including reestablishing advanced warhead concept teams at each of the national laboratories and here at the headquarters in Washington to explore new nuclear-weapons designs that include modifications to existing systems, improved new earth-penetrating weapons, and improved low-yield warheads that would reduce collateral damage. Therefore, they want to shorten the test

time necessary so that if these new designs, in fact, prove out, they will be able to test them more quickly than they otherwise would.

Let me stop there.

Dr. THOMPSON. With regard to China, you know, China has shown remarkable restraint in their nuclear forces for over a generation now. I would have to conclude from that that they are much less of a threat to us in the near term than some people seem to think.

In the past, and probably in the future, China's assessment of what it requires militarily has been based on the regional threats that it faces from the Russians, from the Indians, even from the Vietnamese. I would have to conclude from that that the main reason why the Chinese would want, in the near term, to greatly increase their forces, vis-a-vis, us, is the position we take on Taiwan. The fact that we have 6,000 or 2,000 nuclear warheads, in the past, has not made a big difference to the Chinese, so probably won't in the future. On the other hand, the Taiwan issue could become a major impetus to how they regard their military preparations toward us.

Now, on the subject of reduced resources, I sure like that idea you brought up with the previous panel of going and getting them first instead of waiting for them to launch and then trying to stop the missiles. That just has intrinsic common sense behind it. However, in the past, we haven't always been willing to go do that. In fact, we usually aren't. We usually need a real crisis to get us moving, and that usually means they have launched first. We're only spending 3 percent of our Defense budget on all our missile-defense efforts.

The CHAIRMAN. Yes, I agree.

Dr. THOMPSON. Now, I think Joe's right. I think the reason people don't care about us pulling out is because they don't believe we're going to do anything significant. Certainly five interceptors in Alaska isn't something that's going to change global politics. However, we are doing some things, genuinely transformational things that, down the road, could be quite significant.

And although I basically agree with your priorities and your assessment, I would say this. If your concern is about constrained resources in the future, 3 percent of the Defense budget on missile defense isn't much compared with what we're going to have to spend on those other items you thought we should be emphasizing.

The CHAIRMAN. Well, I agree. I agree. That is my point. And, look, I have voted since I've been a United States Senator, tens of billions of dollars on research on national missile defense, so I have not been—but that's another story. But what I'm talking about is the continued, sort of, dogma now that we are going to. It's a dogma of—it's kind of the new catechism, that we are going to build this—

Dr. THOMPSON. I think we're trying to reassure ourselves.

The CHAIRMAN. I think maybe. I hope that's the case.

I'll conclude with you, doctor. And, again, I appreciate the patience of all of you. I cost you lunch.

Dr. WEINBERG. Well, I'm not a China expert. I have a wok, but that's all.

But I do know that the Chinese have collective leadership and that inevitably, whatever they decide to do about modernizing their missile forces or increasing their size, there will be one side that is in favor of it, and there will be another side that will be against it, because that's the way the world works. And whatever we do—for example, if we build an anti-missile system, it will be an argument in the hands of the people who want to increase their forces.

There was a national intelligence estimate a few years ago that if we deployed a missile defense system, the Chinese would increase their forces by a factor of ten. I think that's not inconsistent with what's been said about missile defense, because they wouldn't necessarily increase their forces if they didn't think we were actually going to deploy a meaningful missile defense system.

But I think we always have to think of the effect we have on them. That might not be the case in a country ruled by a single dictator, like Iraq, but I do think it's the case in countries like Iran, China, many others, which, while very far from being democracies, are, nevertheless, ruled by a clique rather than by a single individual.

As for the spending issue, of course spending on extremely expensive projects like missile defense will produce swingeing cuts in other programs. One of the programs that I'm most concerned about is the Nunn-Lugar programs. The Baker-Cutler report called for spending on that at a much higher rate than we are now doing, and I think that's really a pity.

And, finally, I would say, with regard to stripper wells, I'm from Texas, and I've had exactly the same thing happen to me.

Mr. CIRINCIONE. May I just add one—

The CHAIRMAN. Sure, Joe.

Mr. CIRINCIONE [continuing]. Little Chinese addition. The Nuclear Posture Review places a great emphasis on improving our capability to locate, target, and destroy mobile and relocatable targets. They go into some detail in the review. OK, who's got mobile and relocatable targets? We're talking about using nuclear weapons against them. This is the Nuclear Posture Review. Presumably that means we're worried about nuclear mobile and relocatable targets. Well, that's the direction that the Chinese are moving in. That's what they're modernization is premised on. They want to take their fixed intercontinental ballistic missiles, now 20 years old, and develop a new mobile ballistic missile in approximately the same numbers, but to make it more secure, more survivable, because they have a deterrent force. If the United States is improving its capability to take those out first, that causes the Chinese great concern, that they may not have a survivable deterrent. That raises very profound issues for them.

The CHAIRMAN. Gentlemen, I appreciate your being here, I appreciate the time, and I appreciate your willingness to engage one another. It's the place from which guys like me can learn the most, the circumstance, and I appreciate everything you've done, as well, for the country.

I am going to—with your permission, would like to submit several questions to each of you and warn you that you're all good enough that, unfortunately, we're going to ask you to trespass on

your time again as this debate goes on. I thank you very, very much.

We are adjourned.

[Whereupon, at 1:50 p.m., the hearing was adjourned, to reconvene subject to the call of the Chair.]

