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Introduction

Mr. Chairman, thank you for the opportunity to appear before you today to discuss nuclear weapons programs and policies. I look forward to working with you in this new area of responsibility. I also want to thank all of the Members for their strong support for critical national security activities. Before I begin my remarks, I want to say how pleased I am to be on this panel today with my colleague, Gen. James E. Cartwright, Commander of United States Strategic Command, who will present the military perspective on these issues.

Today, I will discuss with you the Administration's emerging vision for the nuclear weapons enterprise of the future, and the initial steps we will be taking, with your support, to realize that vision. This vision derives from the work of the Nuclear Posture Review (NPR), the August 2003 Conference at Strategic Command, the follow-on NPR Strategic Capabilities Assessment and related work on a responsive nuclear infrastructure—key elements of which are addressed in Acting Assistant Secretary of Defense Mira Ricardel's written statement submitted for the record. The Nuclear Weapons Complex Infrastructure study, currently underway and scheduled to be completed this summer, will further refine this vision. I should add that Gen. Cartwright and the Directors at our three National Laboratories have provided both leadership and creative impetus to this entire effort.

The NPR has resulted in a number of conceptual breakthroughs in our thinking about nuclear forces—breakthroughs that have enabled concrete first steps in the transformation of our nuclear forces and capabilities. The recognition of a more dynamic and uncertain geopolitical threat environment but one in which Russia does not pose an immediate threat, the broad reassessment of the defense goals that we want nuclear forces to serve, and the evolution from a threat-based to a capabilities-based nuclear force have enabled substantial reductions in operationally-deployed strategic warheads through 2012 as reflected in the Moscow Treaty. This has also led to the deep reduction, directed by the President last May, in the total nuclear weapons stockpile required to support operationally-deployed forces. By 2012 the stockpile will be reduced by nearly one-half from the level it was at the time this administration took office resulting in the smallest nuclear stockpile in decades. This represents a factor of four reduction in the stockpile since the end of the Cold War.

Very importantly, the NPR articulated the critical role of the defense R&D and manufacturing base, of which a responsive nuclear weapons infrastructure is a key element, in the New Triad of

strategic capabilities. We have worked closely with the Department of Defense to identify initial steps on the path to a responsive nuclear infrastructure and are beginning to implement them.

Building on this progress, I want to address the current state of our thinking about the characteristics of the future nuclear weapons stockpile and supporting nuclear infrastructure. Specifically, I will address three key questions:

- What are the limitations of today's stockpile and nuclear infrastructure?
- Where do we want the stockpile and infrastructure to be in 2030?
- What's the path to get there?

In laying out these ideas, the Administration hopes to foster a more comprehensive dialog with Congress on the future nuclear posture. I must first emphasize, however, that today stockpile stewardship is working, we are confident that the stockpile is safe and reliable, and there is no requirement at this time for nuclear tests. Indeed, just last month, the Secretary of Energy and Secretary of Defense reaffirmed this judgment in reporting to the President their ninth annual assessment of the safety and reliability of the U.S. nuclear weapons stockpile. Like the eight certifications that preceded it, this year's assessment is based on a collective judgment of the Directors of our National Laboratories and of the Commander, U.S. Strategic Command, the principal steward of our nuclear forces. Our assessment derives from ten years of experience with science-based stockpile stewardship, from extensive surveillance, from the use of both experiments and computation, and from professional judgment.

What are the limitations of today's stockpile and nuclear infrastructure?
Although nuclear weapons issues are usually contentious, I believe that most would agree that if we were starting to build the stockpile from scratch today we would take a much different approach than we took during the Cold War. Indeed, today's Cold War legacy stockpile is the wrong stockpile from a number of perspectives. Let me explain.

First, today's stockpile is the wrong stockpile *technically*. Most current warheads were designed to maximize explosive yield with minimum size and weight so that many warheads could be carried on a single delivery vehicle. During the Cold War, this resulted in the most cost effective approach to meet then existing military requirements. As a result, our weapons designers, in managing risk during a period when we used nuclear tests as part of the tool kit to maintain confidence, designed closer to the so-called "cliffs" in performance. If we were designing the stockpile today under a test moratorium and to support an operationally-deployed force in which most delivery systems will carry many fewer warheads than the maximum capacity, we would manage technical risk differently, for example, by "trading" size and weight for increased performance margins, system longevity, and ease of manufacture.

Second, the legacy stockpile was not designed for longevity. During the Cold War we introduced new weapons into the stockpile routinely and "turned over" most of the stockpile every 15-20 years exploiting an enormous production capacity. Today, our weapons are aging and now are being rebuilt in life extension programs that are both difficult and costly. Rebuilding nuclear weapons will never be cheap, but decisions taken during the Cold War forced the use of certain hazardous materials that, in today's health and safety culture, cause warheads

to be much more costly to remanufacture. Maintaining the capability to produce these materials causes the supporting infrastructure to be larger and more costly than it might otherwise be.

More broadly, our nuclear warheads were not designed with priority to minimize overall demands on the nuclear weapons enterprise; that is, to minimize DOE and DoD costs over the entire life cycle of the warhead which includes design, development, production, certification, surveillance, deployment, life extension, retirement, and dismantlement.

As a result of these collective decisions, it is becoming more difficult and costly to certify warhead remanufacture. The evolution away from tested designs resulting from the inevitable accumulations of small changes over the extended lifetimes of these systems means that we can count on increasing uncertainty in the long-term certification of warheads in the stockpile. To address this problem, we must evolve our strategy from today's "certify what we build" to tomorrow's "build what we can certify."

The Cold War legacy stockpile may also be the wrong stockpile from a *military* perspective. The Nuclear Posture Review identified a number of capabilities shortfalls in the existing arsenal that could undermine deterrence in the future. Specifically, the NPR suggested that current explosive yields are too high, that our systems are not capable against hard and deeply buried targets, that they do not lend themselves to reduced collateral damage and that they are unsuited for defeat of biological and chemical munitions. The designs of the past do not make full use of new precision guidance technologies from which our conventional systems have fully benefited, nor are they geared for small-scale strikes or flexibility in command, control and delivery. We do not know when, if ever, we will need to field new capabilities to deal with these shortfalls. Nonetheless, it is vital that we maintain the capability to respond to potential future requirements.

The stockpile we plan for in 2012 is the wrong stockpile *politically* because it is probably still too large. The President's decision last May to reduce the stockpile significantly was taken in the context of continued progress in creating a responsive nuclear weapons infrastructure as part of the New Triad of strategic capabilities called for in the NPR. But we have a ways to go to get there. Until we achieve this responsive infrastructure, we will need to retain a substantial number of non-deployed warheads to hedge against a technical failure of a critical warhead or delivery system, or against unforeseen geopolitical changes. Because operationally-deployed forces are dominated by two weapons types—the W76 SLBM warhead and the W80 cruise missile warhead—we are particularly sensitive to technical problems involving these systems. We retain "hedge" warheads in large part due to the inability of either today's nuclear infrastructure, or the infrastructure we expect to have when the stockpile reductions are fully implemented in 2012, to manufacture, in a timely way, warheads for replacement or for force augmentation, or to act to correct unexpected technical problems. Establishing a responsive nuclear infrastructure will provide opportunities for additional stockpile reductions because we can rely less on the stockpile and more on infrastructure (i.e., ability to produce or repair warheads in sufficient quantity in a timely way) in responding to technical failures or new or emerging threats.

Finally, today's stockpile is the wrong stockpile from a *physical security* standpoint. During the Cold War the main security threat to our nuclear forces was from spies trying to steal our secrets. Today, the threat to classified material remains, but to it has been added a post-9/11 terrorist threat that is difficult and costly to counter. We now must consider the distinct possibility of well-armed and competent terrorist suicide teams seeking to gain access to a warhead in order to detonate it in place. This has driven our site security posture from one of "containment and recovery" of stolen warheads to one of "denial of any access" to warheads. This change has dramatically increased security costs for "gates, guns, guards" at our nuclear weapons sites. If we were designing the stockpile today, we would apply new technologies and approaches to warhead-level use control as a means to reduce physical security costs.

Let me turn to issues of the nuclear weapons infrastructure. By "responsive" nuclear infrastructure we refer to the resilience of the nuclear enterprise to unanticipated events or emerging threats, and the ability to anticipate innovations by an adversary and to counter them before our deterrent is degraded. The elements of a responsive infrastructure include the people, the science and technology base, and the facilities and equipment needed to support a right-sized nuclear weapons enterprise. But more than that, a responsive infrastructure involves practical and streamlined business practices that will enable us to respond rapidly and flexibly to emerging Department of Defense needs.

Our current infrastructure is by no means responsive. A nearly complete halt in nuclear weapons modernization over the past decade, coupled with past under funding of key elements of our manufacturing complex has taken a toll on our ability to be responsive. For example, we have been unable to produce certain critical parts for nuclear weapons (e.g., plutonium parts) for many years. And today's business practices—for example, the paper work and procedures by which we authorize potentially hazardous activities at our labs and plants—are unwieldy. But progress is being made. We restored tritium production in Fall 2003 with the irradiation of special fuel rods in a TVA reactor, and anticipate that we will have a tritium extraction facility on-line in time to meet the tritium needs of a reduced stockpile. We are restoring some lost production capabilities, and modernizing others, so that later this decade we can meet the scheduled startups of refurbishment programs to extend the life of three warheads in the legacy stockpile. We are devoting substantial resources to restoring facilities that had suffered from years of deferred maintenance. Finally, we have identified quantitative metrics for "responsiveness," that is, timelines to address stockpile problems or deal with new or emerging threats. These will help guide our program by turning the concept of responsiveness into a measurable reality.

That said, much remains to be done. Among other things, we must achieve the scientific goals of stockpile stewardship, continue facilities and infrastructure recapitalization at NNSA's labs and plants, construct a Modern Pit Facility to restore plutonium pit production, strengthen test readiness, streamline business practices, and transfer knowledge to the next generation of weapons scientists and engineers who will populate this responsive infrastructure. Our challenge is to find ways to carry this out that reduce duplication of effort, support consolidation of facilities and promote more efficient operations complex-wide. I want to stress the importance of a Modern Pit Facility even if the stockpile continues to shrink—sooner or later the effects of plutonium aging will require all our current pits to be remanufactured.

Where do we want the stockpile and infrastructure to be in 2030?
Although the legacy stockpile has served us well, it was designed to meet the requirements of the Cold War era, many of which are irrelevant or inadequate today. We need to begin now to transform to the nuclear weapons enterprise of the future—this means transformation to a smaller, less costly, more easily secured, safe and reliable stockpile as well as transformation of the supporting nuclear infrastructure. The two are, of course, intertwined—we see stockpile transformation as "enabling" transformation to a responsive nuclear infrastructure, and a responsive infrastructure as essential to reducing total stockpile numbers and associated costs.

Part of transformation will be to retain the ability to provide new or different military capabilities in response to DoD's emerging needs. Gen. Cartwright will discuss this aspect of transformation in more detail in his testimony.

But transformation involves more than retaining the capability to respond to new military requirements. My main responsibility is to assure the continued safety, security and reliability of the nuclear weapons stockpile. In this regard, even if we never received another DoD requirement for a new military capability for the nuclear stockpile, the concerns raised about our ability to assure the safety, security and reliability of the legacy stockpile over the very long term would still drive the need to transform the stockpile. And the concerns about responsiveness to technical problems or geopolitical change would still mandate transformation of the weapons complex.

More broadly, we must explore whether there is a better way to sustain existing military capabilities in our stockpile absent nuclear testing. With the support of Congress, we are beginning a program—the Reliable Replacement Warhead (RRW) program—to understand whether, if we relaxed warhead design constraints imposed on Cold War systems (that have typically driven "tight" performance margins in nuclear design) we could provide replacements for existing stockpile weapons that could be more easily manufactured with more readily available and more environmentally benign materials, and whose safety and reliability could be assured with highest confidence, without nuclear testing, for as long as the United States requires nuclear forces. Such warheads would be designed specifically to facilitate less costly remanufacture and ease of certification of safety and reliability, and thus would reduce infrastructure costs needed to support that component of the stockpile. Because they would be designed to be less sensitive to incremental aging effects, they would dramatically reduce the possibility that the United States would ever be faced with a need to conduct a nuclear test in order to diagnose or remedy a reliability problem.

There is another reason why it is critical that we begin now to transform the stockpile. We have not developed and fielded a new warhead in 20 years, nor have we modified a warhead in nearly 10 years. We are losing expertise. We must train the next generation of nuclear weapons designers and engineers before the last generation, who honed its skills on nuclear testing, retires. If such training—and I cannot emphasize this strongly enough—is disconnected from real design work that leads to engineered systems, we will, as one laboratory director put it, "create not a new generation of weapons designers and engineers but a generation of analysts" who may understand the theory, but not the practice, of warhead development. If that happens, it would place at risk our capabilities for stockpile stewardship in the future.

Along these lines, as part of the transformation of the stockpile, we must preserve the ability to produce weapons with new or modified military capabilities if this is required in the future. Currently the DoD has identified no requirements for such weapons, but our experience suggests that we are not always able to predict our future requirements. The chief implication is that we must maintain design capability for efforts like those being carried out in the RRW program but also as a hedge against possible future requirements for new capabilities.

What's the path to get there?

Let me briefly describe the broad conceptual approach for stockpile and infrastructure transformation. The "enabler" for such transformation, we believe, is the RRW program. To establish the feasibility of the RRW concept, we will use the funds provided by Congress last year and those requested this year to begin concept and feasibility studies on replacement warheads or warhead components that provide the same or comparable military capabilities as existing warheads in the stockpile. If those studies suggest the RRW concept is technically feasible, and if, as I expect, the Department of Defense establishes a requirement, we should be able to develop and produce by the 2012-15 timeframe a small build of warheads in order to demonstrate that an RRW system can be manufactured and certified without nuclear testing.

Once that capability is demonstrated, the United States will have the option to:

- truncate or cease some ongoing life extension programs for the legacy stockpile,
- apply the savings from the reduced life extension workload to begin to transform to a stockpile with a substantial RRW component that is both easier and less costly to manufacture and certify, and
- use stockpile transformation to enable and drive consolidation to a more responsive infrastructure.

We should not underestimate the very complex challenge of transforming the enterprise while it is operating at close to full capacity with on-going warhead life extension programs and potential evolving requirements. As a result, as we proceed down this path, we will look for opportunities to restructure key life extension programs to provide more "head room" for transformation. This could also provide, in the nearer term, opportunities to ensure appropriate diversity in the stockpile, making our nuclear deterrent less sensitive to single-point failure of a particular warhead or delivery system.

Once we establish a responsive infrastructure, and demonstrate that we can produce new (or replacement) warheads on a timescale in which geopolitical threats could emerge, and can respond in a timely way to technical problems in the stockpile, then we can go much further in reducing non-deployed warheads and meet the President's vision of the smallest stockpile consistent with our nation's security.

Success in realizing our vision for transformation will enable us to achieve over the long term a smaller stockpile, one that is safer and more secure, one that offers a reduced likelihood that we will ever need to test again, one that reduces NNSA and DoD ownership costs for nuclear forces, and one that enables a much more responsive nuclear infrastructure. Most importantly, this

effort can go far to ensure a credible deterrent for the 21st century that will reduce the likelihood we will ever have to employ our nuclear capabilities in defense of the nation.

Conclusion

The Administration is eager to work with the Congress to forge a broad consensus on an approach to stockpile and infrastructure transformation. The vision of our future nuclear weapons posture I have set forth today is based on the collective judgment of the Directors of our National Laboratories and of the Commander, U.S. Strategic Command. It derives from lessons learned from ten years of experience with science-based stockpile stewardship, from many years of effort in planning for and carrying out the life extension programs for our legacy stockpile, and from coming to grips with national security needs of the 21st century as laid out in the NPR.

I hope that the Committee finds our vision both coherent and compelling. But I must emphasize that it is simply that, a long-term vision, nothing more and nothing less. Much of it has not yet begun to be implemented in program planning, or is at the very early stages of development. But we believe it is the right vision to guide our near term planning and to ensure the nation's long-term security. I ask for the Committee's support and leadership as we embark on the path of transformation.

Thank you Mr. Chairman. I will be pleased to answer any questions.