Oral Testimony (10 minutes) to the
HOUSE ENERGY AND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE
Hearing on
REDUCING THE COST OF THE U.S. NUCLEAR WEAPONS COMPLEX
Room 2359 Rayburn

by Richard L. Garwin
www.fas.org/RLG/
March 17, 2009

Thank you. I am Richard L. Garwin and welcome the opportunity to present my views on reducing the cost of the Nuclear Weapons Complex.

As requested, I have submitted my written testimony for the record. I draw on that for these spoken remarks.

1. Most needed for an effective, affordable Nuclear Weapons Complex are policy decisions on the size and nature of our nuclear weapon stockpile itself. This is an urgent responsibility of the National Security Council and has far reaching impact not only on the weapon delivery systems of the Department of Defense and the military forces, but on the National Nuclear Security Administration (NNSA) activities and facilities in creating, maintaining, and disposing of those nuclear warheads and bombs. The NSC decisions should take into account the report of the Congressional Commission on U.S. Strategic Posture, expected April 1, 2009, and should guide and also draw on the Nuclear Posture Review to be conducted by the Department of Defense. As indicated in my testimony, not only is the burden of maintenance reduced with much diminished numbers of nuclear weapons in the stockpile, but the nature of the stockpile depends on such decisions.

a) For instance, if major modifications were to be made to the existing nuclear stockpile, involving a new plutonium-containing nuclear pit, a production rate of 50 per year at the Los Alamos TA-55 plutonium facility would require 50 years of operation to modify half of a nuclear weapon force of 5000 nuclear weapons. It is essential to maintain surety of the nuclear weapons and the nuclear weapon materials against theft and misuse, but even if such modifications provided perfect surety for the modified or replaced nuclear weapons, they would have very little impact on the security of the nation and the world, because terrorists or thieves could concentrate on the weapons not yet modified or replaced.

b) If the total stockpile were 500 warheads and bombs, a production rate of 50 per year could replace the entire stockpile in 10 years.

c) But the existing weapons could well be maintained and fully modernized by thoroughly tested modifications outside the nuclear explosive package, retaining the existing plutonium “pits”, with only test production of new pits (i.e., in “warm standby

mode"), and that would permit the elimination of entire portions of the projected Nuclear Weapons Complex.

2. My second point is that we must maintain and invest in people for the future, even if the nuclear stockpile is much diminished in numbers. It is only by the contributions of vigorous, responsible scientists and engineers in the nuclear weapon laboratories that we can plan on keeping our nuclear weapons safe, secure, and reliable. These nuclear weapons experts will be doing a job of critical importance, and while they don't need luxury, they do need supporting tools, of simulation and experimental facilities both large and small. The ability to conduct nuclear explosion testing of our nuclear weapons would add little to our confidence in safety, security, and reliability.

3. My third point is one of disagreement with the oft heard statement that inevitably, with the passage of time since the last nuclear explosion test in 1992, our confidence in the safety and reliability of existing nuclear weapons is bound to decrease. Quite the contrary. In my opinion, our confidence is likely to increase with time, because of the increased knowledge obtained from our advanced tools of simulation and experiment, and the deeper understanding that these tools provide to our experts. This modernization of our understanding is accompanied by modernization of the existing weapons by replacement and enhancement of the non-nuclear components outside the nuclear-explosive package that includes the primary and the secondary of the nuclear weapon. One example is the announcement by NNSA in late-2006[1] that the nuclear weapon laboratories had established that the plutonium "pit" at the heart of each of our nuclear weapons would last at least 85 years, as contrasted with a number previously believed to be about 45 years. Likewise, the Science-Based Stockpile Stewardship Program has enabled the production at Los Alamos of new nuclear pits for the W-88 missile warhead.

4. As I indicated in the previous discussion of overall nuclear-weapon surety as contrasted with the surety of individual weapons, the consideration of replacement-warhead programs lacks a quantitative assessment of the benefit, the risk, and the cost streams as new warheads are assumed to enter the force. There is lacking also a comparison with the overall impact of improved performance (surety, for instance) that could be obtained sooner with existing weapons by improving the transport containers that protect the weapons during their most vulnerable time. Such "bounding" analyses can be carried out without detailed knowledge of the possible replacement warheads.

5. Finally, smaller weapon stockpiles will reduce the cost of the nuclear weapon complex only if that is a major goal of NNSA and the Congress. Cost reductions can be achieved by increased co-location of production and design activities and by modular approaches to the tasks, so that capabilities could be expanded by replication of bays, tools and staff rather than by over-sized new facilities for large-scale operations.

In the absence of guidance as to nuclear weapon numbers and types that I expect from the NSC, there is little rationale for an efficient program to modernize the Nuclear Weapons Complex; as a result, we see competent officials and their support contractors

[1] Erroneously stated as "late 2007" in my written testimony.

recommending routine replacement and upgrading of facilities. Large, up-front expenditures that could accommodate massive programs that are unlikely to be realized are not in the national interest. More generally, the overall advance of U.S. national security and the U.S. national economy depends upon our countering the forces of industrial and local political support for expenditure, in contrast with the normally diffuse but more important interest in saving on each individual program. Responsible and imaginative frugality is important both to our security and to our economy.

In this regard, I note the recent withdrawal of Duke Energy (February 27, 2009 SEC filing) from the program to fuel existing commercial power reactors with mixed-oxide fuel (MOX) derived from excess weapons plutonium. I judge that all such work within DOE should cease; considerations of plutonium fuel should be limited to its possible use in future breeder reactors if and when such can become competitive with existing light-water reactors in cost and safety. Security aspects of plutonium materials should be addressed primarily by consolidation rather than by disposition, either by use as MOX or by vitrification and commitment to a mined geological repository such as Yucca Mountain.

Thank you for your attention.