Statement

By

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Introduction

Mr. Chairman, Members of the Committee, I am very pleased to appear before you today to address the relationship between nuclear nonproliferation and the Comprehensive Test Ban Treaty (CTBT).

Over the past 23 years, I have been working on issues related to nuclear nonproliferation and arms control. In 1976, I was the first-social scientist to be hired at Lawrence Livermore Laboratory, where I worked closely with nuclear weapons scientists and engineers analyzing nuclear proliferation intelligence. In Washington, I served as Deputy Assistant Secretary for Intelligence & Research in the Department of State. Later, I served as Assistant Director for nonproliferation at the Arms Control and Disarmament Agency, where I was the US Government's principal policy official responsible for implementation of the Nuclear Nonproliferation Treaty. I have authored several books and many articles on the topics of nonproliferation, verification, and arms control.

The principal argument made by the Clinton Administration for the CTBT is that it will further the cause of nuclear nonproliferation. In my testimony today, I will set forth the reasons why this is not true. The CTBT will neither provide a technical obstacle to proliferation, nor inhibit nations' motivations to acquire nuclear weapons. In fact, the CTBT could actually promote the spread of nuclear weapons, as well as enable Russia and others to continue to modernize their arsenals while the US arsenal remains static.

The CTBT Is Not a ``Nonproliferation Tool''

The CTBT Will Not Create a Technical Barrier to Proliferation

The CTBT will not prevent nations from designing and building a workable nuclear weapon. It is well known that some single-stage fission designs are relatively simple, and nations would not need to test them to have sufficiently high confidence that they will work. For example, one of the two bombs dropped to end WW II was a design that had never been tested, and South Africa indigenously built six gun-type nuclear weapons without testing.

Furthermore, the CTBT would not confine new proliferators to simple designs. Today, nonboosted, implosion-type weapons may also be designed with high confidence, without testing. The level of complexity of the nuclear design possible without testing is dependent on the technological sophistication of the nation concerned.

Nuclear weapons testing is not essential for proliferating nations, in part, because information related to nuclear weapons is now widespread. The technological hurdles faced by US weapon designers in the 1940s are long gone. Universities teach courses in physics, engineering, metallurgy, and chemistry that can provide a sound basis for a nuclear weapons program. The information superhighway enables researchers in remote locations to access thousands of relevant articles and reports, as well as to seek assistance from experts who, prior to the invention of the Internet, were inaccessible. Advanced computers, although not a prerequisite, are readily available and make weapons design easier. The state of knowledge has also advanced with regard to materials, which makes it easier for a nation to design lighter, less bulky weapons than those built at the outset of the US nuclear weapons program. When combined, these variables make it feasible for a nation to design with high confidence a nuclear weapon that, in the not-so-distant past, would have been considered quite sophisticated.

Critics may argue that new proliferators would want to test a design_just as the United States usually does_before stockpiling it. However, there are important differences between proliferators' needs, perspectives, and targeting requirements, and those of the United States and Russia. During the Cold War, both sides focused on targeting one another's military sites. A premier objective has been pinpoint strikes against small targets such as silos, rather than cities. This dictated high-performance delivery systems, which, in turn, required tight parameters on the allowable weight, size, shape, safety measures, and yield. In the case of the United States, these requirements contributed to the US reliance on highly complex designs. Additionally, US and USSR interest in the battlefield effects of their warheads was high, and both have had high standards for reliability.

By comparison, proliferators are likely to target cities, not silos. Their delivery vehicles may be ships, barges, trucks, or Scud-type missiles. Proliferators may not care whether the yield they obtain is exact, may not have tight restrictions imposed by advanced delivery systems or safety standards, are unlikely to have highly complex designs, and may not care about battlefield effects. Also, proliferators may have an entirely different standard for reliability. In other words, it is quite feasible for a nation to develop a device that will work, as long as it does not matter if the precise yield is known and there are no exacting specifications which must be met.

In summary, the CTBT will not create a technical obstacle to nuclear proliferation. The need for nuclear testing increases in proportion to the complexity of and requirements for the nuclear warhead design. However, it is quite feasible for a nation to design, build, and stockpile nuclear weapons without nuclear testing.

The "International Norm" Argument is Meaningless

CTBT proponents contend that the test ban will constrain all nations, even those who are not party to the agreement, from conducting nuclear tests because an international norm will have been created. History is replete, however, with examples when norms fail to inhibit nations. Usually this occurs when a nation views breaking the norm to be in its security interests.

One example of the failure of an international norm is provided by the history of non-adherence of some parties to the Biological and Toxin Weapons Convention (BTWC), which outlawed the possession of biological weapons. Iraq had signed but not acceded to the BTWC, but proceeded secretly to produce massive quantities of biological agents. The Soviet Union, and later Russia, violated the treaty and its norm. As a party to the BTWC, Russia was obligated not to produce biological or toxin agents, yet did so.

An even more relevant example is provided by the Nuclear Nonproliferation Treaty (NPT), which established an international norm against nuclear proliferation. The NPT norm against the pursuit of nuclear weapons has been broken repeatedly, both by the treaty's parties and by non-parties. Over the history of the NPT norm, the list of states which broke or are thought to have broken the norm include: Argentina, Brazil, India, Iran, Iraq, Israel, North Korea, Pakistan, South Africa, South Korea, and Taiwan. North Korea is still in violation of the treaty and its norm, with no adverse consequences for its noncompliance.

It is also worth noting that the NPT is signed by-virtually every country except Pakistan, India, and Israel. The CTBT, therefore, would be a treaty in which nations promise not to test the weapons that they have already promised not to develop. It is redundant.

The CTBT Will Not Reduce Nations' Motivations to Proliferate

CTBT proponents have argued that the treaty will lessen the motivations of other nations to acquire nuclear weapons. The assumption is that the United States will show ``moral leadership" and others will follow suit. In reality, the opposite may be true.

Nations seek weapons based on their own perceptions of their security needs. If a nation feels threatened, or if it seeks to dominate its neighbors or its region, nuclear weapons may be appealing. A nation whose leadership believes nuclear weapons are needed for security is not going to abandon the idea simply because the US conducts or does not conduct nuclear tests.

In the long run, however, lack of US nuclear testing may actually promote nuclear proliferation. Let me give you two possible scenarios.

Many nations currently rely on the US nuclear umbrella for their security. Many of these nations have the technical capability to quickly acquire nuclear weapons if they so desire, but do not feel that they need to do so. Over time, it is inevitable that US confidence in its stockpile will continue to decline in absence of nuclear testing. Also, it is likely that the numbers of design types in the stockpile will diminish as weapon types develop problems that cannot be fixed without testing. Our allies will see this too. Their confidence will similarly decline. They may very well decide that having their own nuclear weapons would provide better security than depending on an aging US stockpile and a US government that is clearly not committed to keeping its arsenal in the most safe, reliable condition possible.

Nations not allied with the United States may also be inspired to acquire nuclear weapons as a result of US abandonment of testing. They will see the US stockpile atrophy and the decline in US commitment to nuclear deterrence. In particular, if problems result in removal of one or more weapons types from the US arsenal, other nations will see the playing field as more level. They will perceive that a moderate nuclear arsenal of their own may actually be able to provide a nuclear challenge to the aging, diminished US nuclear capability.

The CTBT Would Constrain Nuclear Modernization

Proponents of the CTBT argue that the treaty will also serve nonproliferation by preventing modernization and development of new nuclear weapons by the states that now have them. This is true, but this is a serious drawback for the United States.

We cannot know what the future will bring. The past tells us that other nations will continue to develop technologically and that the nature of our deterrent must evolve to meet new challenges. Our arsenal may need modernization to counter new threats such as biological weapons, or new targets like deeply buried bunkers, or to fit new delivery vehicles. The past also shows that the technology of safety will continue to evolve, producing ever more capable safety features that could be incorporated into our stockpile. Modernization, whether for safety or to improve the effectiveness of our deterrent, would require nuclear testing.

Under the CTBT, the United States arsenal would remain static, or even decline. Other nations, however, would be able to cheat without detection, thus improving the relative power of their nuclear capabilities. This point deserves elaboration.

The CTBT Is Unverifiable

Members of the US intelligence community have publicly stated that the CTBT is not effectively verifiable. What do they mean?

When I served in the Reagan and Bush Administrations, "effective verification" was accepted to mean Ahigh confidence that militarily significant cheating will be detected in a timely manner." In

the case of the CTBT, we need to know two things: What yield nuclear test can provide militarily significant information? and, Can the CTBT verification system detect to that level?

All three US nuclear weapons laboratories have agreed that testing at 500 tons of nuclear yield is a very useful testing level, although not sufficient to gain full confidence in all aspects of an existing weapon's performance or to develop sophisticated new nuclear weapons. The lowest possible yield to accomplish new designs as well as safety and reliability depends upon warhead requirements, but most designs could be adequately tested at yields between one and 1 0 kilotons. Five hundred tons would be sufficient for reliability testing, but a higher yield would be needed to certify any new design that was a major departure from already-tested designs. Therefore, it is reasonable to assume that IO kiloton tests would be militarily significant, and tests down to a level of 500 tons may also be.

The International Monitoring System (IMS) of the CTBT is expected to provide the ability to detect, locate, and identify non-evasive nuclear testing of 1 kiloton or greater. However, a nation may conduct nuclear tests evasively, which would allow several kilotons to be tested with little or no risk of detection. One method by which this might be done is.through energy decoupling_detonation of the device in a cavity_that can reduce the signal by as much as a factor of 70. Thus, a kiloton explosion could be made to look seismically like a 14 ton explosion fully coupled. A 10 kt explosion could look like a .14 kt explosion.
It is clear that the IMS will not be able to detect nuclear testing below 1 kt and, if the test is evasively conducted, will not detect several kilotons. Supplemental data from US national technical means will not fill the gap. The United States has stated that its *objective* is to have the capability "of identifying and attributing with high confidence evasively conducted nuclear explosions of about a few kilotons yield in broad areas of the globe." The US Intelligence Community acknowledges that this is a "complex task" that "will require a lot of work, time, and the necessary resources" to achieve. For the present, even with a fully functional IMS supplemented with data from US national technical means, it is possible that a militarily significant test could be evasively conducted without detection.

Another problem with detection and *identifying* low-yield events is the large number of signals in these ranges. At lower yields, the number of non-nuclear events of similar size increases (e.g., mining explosions and earthquakes on land, explosions for geophysical exploration, volcanoes at sea, meteorite impacts in the atmosphere). These non-nuclear events increase the total number of events to be processed by a verification system, and a small percentage of them generate signals similar to those expected from nuclear explosions. This increases the difficulty of identification.

In summary, militarily significant testing can be conducted with little or no risk of detection by either the IMS system or the supplemental capabilities of US technical means.

Conclusion

For the sake of nuclear nonproliferation, we are considering ratification of the CTBT. Yet, the CTBT will not meaningfully accomplish the nonproliferation goals set out for it. Nations will be able to design and deploy nuclear weapons without testing. The objective of creating an

international norm against testing is, as history has demonstrated with other arms control nonns and agreements, not meaningful. Thus, the potential benefits of the CTBT to nuclear nonproliferation are meager or nonexistent.

On the other hand, the CTBT will have a profound impact on the ability of the United States to assure that its nuclear weapons continue to be as reliable, safe, and effective as can be. Ratifying the CTBT would foreclose the ability of the United States to modernize its nuclear forces because US compliance is certain. However, some other nations with highly sophisticated weapons are likely to test evasively_to the disadvantage of US security. Thus, the limited political benefits of the CTBT are not worth the high cost to our national security.