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The Comprehensive Test Ban Treaty: Questions and Challenges

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Abstract

On March 30, 2012, the National Research Council released a report on the Comprehensive Test Ban Treaty (CTBT). Proponents of the CTBT claim that the report vindicates their, and the Obama Administration's, desire to revive the treaty—which was adopted the United Nations in 1996, but has not been ratified by the U.S. and many other countries. However, the report has not convinced everyone of the wisdom of once again addressing the CTBT in the U.S. Congress. There remain disagreements among technically savvy defense experts. On April 10, 2012, The Heritage Foundation hosted three such experts to discuss some of technical issues and broader strategic questions that surround the debate over the CTBT.

This paper, in its entirety, can be found at **http://report.heritage.org/hl1218**

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PETER BROOKES: On March 30, the National Research Council (NRC) released a report that is already being called the "final word" on the long-standing technical concerns surrounding the Comprehensive Test Ban Treaty (CTBT). CTBT advocates have responded with excitement, and the findings of the report are already being used to build a case for taking another look at the once-rejected treaty.

This report comes at an all-too-convenient time, as the same CTBT is being revived by the Obama Administration in an effort to advance the President's non-proliferation policy, including taking America down the mythical road to nuclear zero. However, the NRC report failed to convince some people of the wisdom of once again addressing the CTBT in the U.S. Senate. There are disagreements among technically savvy people and experts, like we have here today, regarding these issues.

It was just these kinds of disagreements that caused the Strategic Posture Commission to report in 2009 that it could not reach a consensus position regarding U.S. ratification of the Comprehensive Test Ban Treaty. The opponents of the

Key Points

- Long-standing technological and political issues of the Comprehensive Test Ban Treaty (CTBT) remain unresolved. The recent National Research Council report on the CTBT, despite being touted as resolving the issues, illustrates such differences.
- The CTBT is not in the U.S. interest. The treaty fails to define what constitutes a prohibited nuclear weapons test, it delegates decision-making power to a supranational body, and has potentially ineffective enforcement mechanisms.
- U.S. ratification of the CTBT would allow other countries, including Russia and China (which have been conducting nuclear weapons tests) to cheat, while the U.S. would lose its quantitative advantage in deployed strategic nuclear warheads under New START, and continue its disadvantage in the number of deployed short-range nuclear weapons.
- The CTBT could further delay long-overdue modernization of the U.S. nuclear deterrent. The commitment to zero nuclear weapons worldwide, and to the maintenance of a safe and effective nuclear deterrent are, ultimately, mutually exclusive.

CTBT ratification on the commission stated that "maintaining a safe, reliable nuclear stockpile in the absence of testing entails real technical risks that cannot be eliminated by even the most sophisticated science-based program because full validation of these programs is likely to require testing over time."

As you know, there are also concerns about the verification and enforcement of the CTBT. As such, there is an array of technical questions and broad strategic questions that surround the debate over the value of the CTBT. It is worth examining some of these questions, and to do so we have gathered a distinguished group of experts.

Joining me today up here is Ambassador Paul Robinson, president emeritus and former director of the Sandia National Laboratories, and former chief negotiator and head of the U.S. delegation to the U.S./USSR Nuclear Testing Talks in Geneva from 1988 to 1990. Next, John Foster. John is the former director of Defense Research and Engineering at the U.S. Department of Defense, and former director of the Lawrence Livermore Laboratory. Last but not least, Thomas Scheber, vice president of the National Institute for Public Policy, and former director of Strategic Strike Policy in the Office of the Secretary of Defense.

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AMBASSADOR C. PAUL ROBINSON: Usually, when NRC reports or other National Academy reports are issued, someone comes forward to "damn them with faint praise." I thought I'd reverse that somewhat, and so you'll see from my remarks I want to "praise it with faint damning."

I have devoted the majority of my own life to the United States strategic deterrent efforts. Right out of graduate school, I went to Los Alamos, later led the nuclear weapons programs there, and after taking a job in New York City in the World Trade Center, which is its own side story, fortunately I got a call from the White House and ended up leaving the World Trade Center for Geneva for the pleasure of working hundred-hour work weeks for three and a half years. First, with the negotiation of a joint set of verification tests to "try before buy," the verification that would be put forward to ratify the two treaties that had sat for more than a decade—the Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty.

We completed that work, and I'm proud to say the Senate agreed to ratify those unanimously, and I believe the reason why was the strong verification that both sides had developed. We both got very familiar with how the proposed verification methods worked and both sides agreed on them, and the treaties and verification protocols remain in force today. I came back to the U.S. and took the greatest job in the world that I could ever imagine, leading Sandia Laboratories. Today, I'm failing retirement and spending far too much time still analyzing issues and giving talks.

I had the pleasure of appearing as a witness before both the 2002 National Academy of Sciences (NAS) committee [on Technical Issues Related to the Ratification of the Comprehensive Nuclear Test Ban Treaty] for its first report, and again as a witness for this follow-up report to look at technical progress since. Now, I did not have much respect for that first committee. I felt it was not exactly the right thing to do, coming right on the heels of the Senate vote not to ratify the treaty, to then create a committee which had the President's lead person for advocating that treaty serve as the chairman. Indeed, the membership itself looked somewhat like "a stacked deck" at that time. The final report showed it, so when the decision was made to pick it up 10 years later and try to see what changed, I was worried, but still agreed to talk with them.

Whereas one could not accuse that first report of being an intellectually deep or well-balanced study, I believe you can say about this report, that it is very much improved. The NRC covered a much larger set of issues, and on some of them it does a very good job. I still find fault with some points, as you will see. But, it does make far more interesting reading in its thoroughness, and, indeed, I'm proud to say that this group took up the primary issue of this treaty as being foremost about the defense of the country and our national security, and it tried to keep that uppermost, which is what I believe all of us must do in examining any such provisions. That pleased me greatly.

Finally, the last disclosure: as a member of the National Academy of Engineering, I was invited to be a formal reviewer of the NRC report. I was pretty tough in my comments, and the way the rules of the academy work, committees are not required to change anything in their reports due to reviewers' comments; they *are* obliged to consider strongly any of those made, and I believe they have done an honest job—and certainly

the report that was issued at the end of last month is quite a bit different from the copy I reviewed, and I'm also pleased with that result.

You in this audience are doubtless aware of the other committee that has since reviewed the CTBT, which is normally called the Strategic Commission—its formal name being the Congressional Commission on the Strategic Posture of the United States. It was a bipartisan group; half appointed by the Democratic side, half by the Republican side in the Congress. Both houses of Congress participated. The one issue on which that commission could not achieve agreement is whether it would be a good idea to ratify the CTBT. The current NRC report does not take such a divided approach, but I would caution you to read everything**,** because quite often you will see contradicting statements to earlier statements made just a few pages before. So there still are considerable differences among participants in reviewing these same issues.

Let me cite just a few of the examples that I find significant from the new report. First of all, let me tee up their Finding 4.7. I think it's one of the most important recommendations in the new report. It deals with how some nations might be able to carry out evasive nuclear explosion testing that could *not* be detected by the international monitoring system or any open monitoring networks. The committee estimates that such evasive tests "are credible only for yields below a few kilotons worldwide, and at most a few hundred tons at well-monitored locations." I'm pleased to note this, as it is a significant change from the first report, and it brings the academy's estimates into somewhat closer conformity with the National Intelligence Estimate (NIE) conclusions, although I won't go any further on that subject.

A debate ensued when the U.S. nuclear weapons labs were called upon in 1995 to deliberate on a change that the U.S. was considering within the Clinton Administration to alter the position that was already tabled in Geneva to a zero-yield level. At that time, we in the U.S. labs requested that the permitted test level should be set to a level which is in fact lower than a one-kiloton limit, which would have allowed us to carry out some very important experiments, in our view, to determine whether the first stage of multiple stage devices was indeed operating successfully.

Now, I'm not allowed to quote the specific number there either, but trust me, it was below that range, which means that today, others may be carrying out such experiments without detection, while the U.S. is forbidden to do so.

I bring this up because some of the members of the first NAS committee (and on the recent NRC committee) were members of the Review Committee that advised then Secretary of Energy Hazel O'Leary on CTBT decisions, as she was putatively the decision-maker on that point. Their recommendation then was not to allow such experiments. But today they must be aware that, even though the U.S. government formally took their advice to not allow such experiments for the U.S. labs, they are in the allowed range for others today, because they can be carried out without being detected in apartment-size rooms with only a miniscule amount of radioactive material.

In that regard, I would refer you to my own written testimony in 1999 before the Senate "advice and consent ratification vote." My major conclusion at the time was: "If the U.S. scrupulously restricts itself to zero yield while other nations may conduct experiments up to the threshold of international detectability, we would be at an intolerable disadvantage." I then stated: "I would advise against accepting limitations that permit such an asymmetry."

To be perfectly clear on this point: Allowing other nations to perform scaled experiments gives them the ability to continue to do experimental proof testing of their stockpiled nuclear arsenals, and therefore the means to prove that their devices are still working, while the U.S. is restricted to surveillance examinations on weapons that otherwise must sit on the shelf. You don't always get the symptoms to show themselves, i.e., that there are underlying difficulties, just as for most medical defects. For this reason, allowing others to have supreme confidence (while we do not) is certainly a mistake. For that reason alone, I'm proud that the U.S. Senate did not ratify such a flawed treaty.

Surprisingly, the new NRC report discusses testing by the Russians—not only "hydro-nuclear experiments" (experiments that do provide nuclear yield, but at a level comparable with the high explosive yield that's driving the device)—but also non-explosive chain reactions (which also have the acronym "NRC"), which the National Research Council is discussing. Pay close attention; I'll try not to confuse these acronyms further.

The former Minister for Atomic Energy of the Russian Federation, Victor Mikhailov, who's an old acquaintance of mine, both in his past service as a chief scientist for nuclear weapons and in his presence on the Soviet delegation for the nuclear testing talks—for which I

was the U.S. negotiator—has stated, according to the new NRC report, that "nuclear energy releases less than one ton are considered laboratory experiments, not nuclear weapon tests." The NRC report significantly concludes, "Thus it seems plausible to the committee that repeated NRC experiments could be helpful in maintaining the inventory of Russian nuclear weapons, perhaps including life extension and modifying materials to improve safety." Further, although a conducted "contained hydro-nuclear series" would in principle go undetected even by an advanced U.S. atomic energy detection system (AEDS) and further in the same paragraph, the NRC discusses smaller nations with nascent nuclear weapon programs: "Such a series would be costly in terms of plutonium or highly enriched uranium, and such a state might choose to conduct such tests which could not be detected by the United States or by the international monitoring system."

Again, the NRC committee focused most of its intention on *less than one ton of nuclear yield*. (Notice the shift from kilotons to one ton, which the report committee devised and determined to do, because of its belief that "anyone trying to violate a treaty will want to be extra careful and have 90 percent confidence that they could not be caught," and they, hence, then move the discussions from the one kiloton range down to one ton.) But the NRC committee also cited in Finding 4.6 (right before the one I previously referenced) a kiloton as "the upper limit," yet it states that even a nuclear yield "below a few kilotons is an upper limit that can be covertly hidden by coupling or masking worldwide."

One curious weakness in judgment that I'll point out here is the extensive discussions in the report, based on the assumption that if a nation wanted to clandestinely carry out evasive tests, it would choose to do so within its nuclear test site. Now, this is exactly the opposite of what our intelligence community believes; an evader would never attempt to go to the area that we're most heavily monitoring to carry out such an explosion, but certainly countries with large territorial masses would likely find very remote areas in which to conduct their tests, not only because of the ability of great secrecy there, but because they're the farthest from any U.S. monitoring systems.

Lastly, I want you to note particularly a phrase that the new NRC committee has articulated and repeats many times in this report—even though it does not appear in the first report—and that is, "whether or not the CTBT were in force." This appears not only throughout the discussions, but also appears within committee findings. Now, I would ask: Are we as readers to accept therefore that this NRC report is not intended to be an advocacy piece; or perhaps it is telling us that NRC members are no longer advocates for CTBT ratification?

I would now like to shift gears and talk for a moment about why I feel very sure that the CTBT will never enter into force even were the U.S. to ratify it, which I don't recommend, of course. Most of my reasoning for why it won't ever enter into force is that the treaty itself imposes an annex with a list of 44 specified nations who must all ratify it before it can enter into force. Among this list of nations are China, Egypt, India, Iran, Israel, Pakistan, and. of course, North Korea, which, when I was penning this paragraph, had already made headlines again with news that it is likely preparing for yet another nuclear test.

Now, with that question on the table, let me shift to a few issues regarding the CTBT itself and some of its other faults and flaws, particularly within its existing text. Some of these are dismissed in the new NRC report, although the committee did state that an examination of the treaty itself was not part of its task and so committee members have not devoted themselves with a lot of attention to the treaty.

The first issue is: What is the purpose of a comprehensive ban on testing? The preamble of the treaty states in paragraph five,

> The cessation of all nuclear weapon test explosions and other nuclear explosions can be constrained in their development and qualitative improvement of nuclear weapons and ending of the development of advanced new types of nuclear weapons, thus it constitutes an effective measure of nuclear disarmament and non-proliferation in all its aspects.

This statement has been known to be false for a very long time. I and many others have pointed out that the first U.S. nuclear weapon, the "Little Boy" device, which was first exploded over Hiroshima, had never been previously tested, nor would any fission unboosted devices (those devices without any thermonuclear boosting) require nuclear testing. None of these requires nuclear testing, nor would other concepts that have subsequently emerged.

The new NRC report directly addresses that point in its executive summary, saying the development of weapons with lower capabilities, such as those that might pose a local

or regional threat or that might be used in local battlefield scenarios, is possible with or without the CTBT for countries with different levels of nuclear sophistication. Thus, the NRC believes that while such threats are of great concern to the U.S., we would be able to respond to them as effectively whether or not the CTBT is in force.

Now, I would hasten to say that, without doing nuclear testing, those first generation types of weapons with no thermonuclear boosting elements can still provide yields in the range of 15 kilotons to 50 kilotons. Yet, I believe those would be a problem in any scenario, not just if they were deployed on a battlefield or in some regional area. They are truly elements of grave concern and must be recognized as such.

The congressionally created Commission on Strategic Force Posture of the U.S., of which John Foster was a member, after not being able to agree on whether the CTBT was a good idea, concluded in its final report (under "The case made by opponents of the CTBT ratification") that the main argument is that there is no demonstrated linkage between the absence of U.S. testing and non-proliferation. And, later within the same paragraph: The CTBT would not prevent other countries from developing basic nuclear weapons because for those, testing is unnecessary.

Lastly, the CTBT for the first time takes a major step in drastically changing diplomacy of security treaties by surrendering major strategic defense decisions to an international body—a subgroup of the United Nations! First of all, there is the conference of the state parties, which will probably number about 200 nations, if it should ever enter into force. Below that, this "council" would create an executive council (of individuals from 51 of the member states). That is, they would be elected from the larger set of 200 nations and would serve on a rotating basis. You of course would need that group's permission to conduct an on-site inspection**,** and it rules on any other operational concerns with the treaty.

The CTBT did further set a requirement that all matters of substance would require a two-thirds majority vote. For example, if the U.S. were a member at the time that a major issue came up, its maximum voting authority on all matters would still be less than 2 percent. I think in these United Nations, that's not a very good percentage.

Finally, the CTBT is silent itself on the issue of compliance verification, except for establishing the International Monitoring System. But nothing has yet been decided about what to do should there be a problem.

Let me now pass the discussion to my colleagues.

JOHN FOSTER: Thanks to The Heritage Foundation for the invitation to this discussion on the potential implications of ratification of the CTBT. Since Paul has provided a rather detailed description of the situation regarding CTBT, I plan to present a more general view.

The National Academy of Sciences Report on the CTBT offers an excellent contribution to the understanding of the technical issues related to CTBT and the maintenance of our nuclear deterrent. Its findings are the result of a rather thorough examination of the assigned issues.

Of paramount importance are the recommended actions that should be implemented by the Administration and strongly supported by the Congress. President Obama has pursued two nuclear policies: first, the commitment to take concrete steps toward zero nuclear weapons worldwide, and second, the maintenance of a safe, secure, and effective nuclear deterrent for the foreseeable future. These two policies are competitive and each has had successes and faces important opportunities and serious risks going forward.

The commitment to a nuclear zero worldwide has been a U.S. goal for more than six decades. During the peak of the nuclear arms race, the U.S. made a policy decision to unilaterally initiate reductions in deployed weapons. Then, with a full court press, the U.S. and the Soviet Union, then Russia, were able, through a sequence of negotiated agreements and treaties, to reduce their deployed nuclear weapons from tens of thousands to the results provided by the New START Treaty. A remarkable accomplishment!

Now, having secured the low-hanging fruit, the Administration is attempting two more steps: (1) reductions in both strategic and tactical weapons, and (2) ratification of the CTBT. Two main hurdles are: first, Russian resistance to agree to lower strategic limits along with stiff demands in return for reductions in its large deployed force of tactical nuclear weapons. Second, all our potential nuclear adversaries are increasing their nuclear capabilities and inventories. Progress on both hurdles requires the initiation of additional intelligence tasks and development of new monitoring and verification capabilities and also multilateral negotiations with allies and potential adversaries.

The United States' second nuclear policy—maintenance of a safe, reliable, and effective nuclear deterrent for the foreseeable future—has been

an increasing challenge since the collapse of the Soviet Union. As is characteristic of our democracy, after the collapse of the Soviet Union, we then made major reductions in our Intelligence Community, dissolved and dispersed components of the Strategic Air Command and reduced the priority on nuclear weapons.

In 1995 the Stockpile Stewardship Program was established to invigorate activities in the nuclear weapons laboratories. That program produced some significant scientific advances. However, it also failed to provide the necessary surveillance of the aging warheads, was prevented by Congress from pursuing the Reliable Replacement Warhead, the Nuclear Penetrating Warhead or any "new" designs. Those actions denied the laboratories the opportunity to develop and demonstrate nuclear weapons competence from design through to production and flight tests.

Recently the Secretary of Defense and the Commander of STRATCOM have expressed concerns over the failure of the National Nuclear Security Administration (NNSA) to plan, budget, and deliver products to the Defense Department on schedule and on cost. Of particular concern is the plan and schedule for the Life Extension Programs (LEP) stockpile of warheads, which has been executed so infrequently that the average age has steadily increased over the last 20 years.

Given this mixed performance, this Administration made the commitment to maintain the TRIAD and modernize the nuclear deterrent. A five-year budget was submitted that would reverse the general decline of the last 20 years.

Unfortunately, the past financial trends have not yet been reversed and for two reasons: First, the Congress reduced the FY 2011 request and, second, the financial crisis is causing the Administration and Congress to make further reductions.

The academy's committee members became aware of the histories, the current situation, and the hurdles ahead for negotiations on further reductions in nuclear weapons, CTBT ratification, and efforts to maintain our nuclear deterrent. For each policy objective, the committee made recommendations to reduce the risks and increase the probability of success.

In making a recommendation, the committee frequently stated specifically that the U.S. would be able to cope with the situation whether or not the CTBT was ratified. Its findings, recommendations, and conclusions regarding the modernization and maintenance of the nuclear deterrent lead me to conclude that implementation of its recommendations is a prerequisite to further pursuit of that policy objective whether or not the CTBT is ratified.

My personal interest and concerns are in maintaining our nuclear deterrent and extended deterrent. Senate ratification of CTBT could further delay modernization of our nuclear deterrent. My reason is simply because, as I said at the beginning, the two policies are competing. For example, as The Heritage Foundation's Baker Spring has pointed out, Chapter 5 of the Preamble to the CTBT states that,

> Recognizing that the cessation of all nuclear weapons test explosions and all other nuclear explosions, by constraining the development and qualitative improvement of nuclear weapons and ending the development of advanced new types of nuclear weapons constitutes an effective measure of nuclear disarmament and nonproliferation in all its aspects.

As a consequence, if the Senate were to ratify the CTBT, more Members of Congress would then be more supportive of the academy's recommendations regarding the CTBT, and fewer Members would support the recommendations regarding nuclear deterrence, and the consequences could be very serious because the potential for military conflict exists in the Middle East, the Taiwan Strait, the India-Pakistan border, and other regions where the U.S. has allies, civilians, and military forces.

Russia has said it has developed low-yield, clean, penetrating, and electromagnetic-pulse (EMP) nuclear weapons, and if provoked by a conventional attack, Russia would use such nuclear weapons to terminate the conflict. Other than a low-yield warhead, the U.S. has no deployed nuclear weapons with such capabilities. Our Cold War weapons lack the credibility to deter such a threat.

Similarly, China has warned that if the U.S. were to send a carrier force to support a possible invasion of Taiwan, China would use an EMP weapon to disable the command and control capabilities of that carrier force.

Congress has denied the development of such "new" weapons, and the word "credibility" has been dropped from the characteristics required of the U.S. nuclear deterrent. It seems obvious that such capabilities, tailored to deter regional conflicts, should be a part of the future U.S. deployed military capability.

The academy's Summary states that

the Stockpile Stewardship Program has captured knowledge of the United States history of nuclear-explosion tests and systematized it into a discipline that could be used to recreate any of the previously tested competencies. As a result the CTBT would not prevent the United States from responding effectively if military and political decisions required development of previously tested weapon types not now present in the stockpile.

The military and Secretary of Defense have stated such requirements, but the Congress refused the requested funds and established the policy of no "new" military capabilities. The Obama Administration now supports that policy. But the Administration has not been willing to even ask the laboratories to examine whether such capabilities could be provided with or without nuclear testing.

Following is a small sample of the actions that the laboratories and plants would be able to take if the recommendations of the academy's committee were implemented:

- Instead of further personnel lay offs, budget increases would permit the weapons program to attract and retain the most attractive candidates to a career in nuclear weapons. Incidentally, about a week ago, 557 employees of Los Alamos left the laboratory as part of the effort to cope with the anticipated $300 million shortfall.

- Provide an infrastructure and production capability that is responsive and resilient, including replacement of the "delayed" CMRR multibillion dollar facility for Los Alamos by an up grade of the PF-4 facility.

- The nuclear warhead surveillance program would provide timely information to the laboratory directors and the Defense Department.

- Permit an accelerated schedule of LEPs to develop and demonstrate competence in the science, engineering, production, and flight test by an integrated work force.

- Those LEPs could also stop and reverse the constantly increasing age of the over-age warheads.

- Provide the opportunity and capability to respond to nuclear "surprises" and new military requirements.

- Decrease the concerns of the Secretary of Defense and Commander of STRATCOM regarding the delivery of products on schedule and on cost.

- Lead to an increase in the confidence expressed by the laboratory directors in the safety, security, and reliability of the stockpile in their annual letter to the President.

Such actions should have been taken during the last two decades. They were not taken primarily because, for political reasons, the Congress has not been willing to arrest the decline in the nation's nuclear deterrent.

A second Senate rejection of CTBT ratification would again present the opportunity for Congress to muster the political support for modernization of our nuclear deterrent.

Thank you.

THOMAS SCHEBER: With the background provided by Ambassador Robinson and Dr. Foster, I would like to focus my remarks on the question: What does the recent National Research Council's report on the CTBT mean for how we now view ratification of this treaty? A year ago, Kathleen Bailey and I co-authored an assessment, a critique of the CTBT. We found that in sorting through the issues, people we talked to had a difficult time sorting out which facts were relevant and which were not relevant. So, to structure the analysis, we looked at three different criteria. What I'd like to do is to discuss those criteria and then talk about how the National Research Council's report addresses or sheds additional light on each, and in what way.

The three criteria are as follows. The first is the treaty itself: Is it well-structured and verifiable? And, will it enhance security for the U.S. and its allies? The second criterion is: Are the political and diplomatic benefits of ratification of the CTBT real or just hoped for? What is the evidence for those expected benefits? The third is: Can we sustain an effective nuclear stockpile for deterrence and assurance without nuclear testing? If so, what are the risks? The NRC report focused on technical issues. Some of these criteria are not technical, but the NRC report does shed additional light on some aspects of these criteria.

Let me address the first topic, the treaty issues. Numerous problems with the treaty itself have been a major source of opposition to ratification of the CTBT in the U.S. The treaty lacks a definition of what constitutes a nuclear test. (The lack of a definition is discussed somewhat in the NRC report.) The treaty is unlikely to ever come into force because of the required ratification

of 44 specific states. (Ambassador Robinson discussed that issue.) The treaty is not verifiable. If we look at the National Research Council report, we see that it talks a lot about detection. Detection is quite different from verification. Detection alerts us to the fact that we need to investigate further and perhaps conduct an on-site inspection. But that on-site inspection cannot be conducted if the treaty hasn't entered into force or if 30 of the 51 member states of the executive council haven't agreed to authorize an on-site inspection. There are no enforcement measures to deal with cheating, and the treaty is of unlimited duration—so we have a "forever" treaty that is not enforceable.

One of the two main technical issues that the NRC report dealt with was that of improved detection capabilities, a very important topic. There's a lot of very good information in the report, but once again, the improved detection capabilities do not mean the treaty is verifiable. Treaty supporters will likely interpret the NRC report to conclude that, "we can detect, so therefore it is verifiable." That is simply not so.

Let me discuss the issue of entry into force that Ambassador Robinson raised. The advocates of the treaty will point to the large number of member countries which have either signed or ratified the CTBT. In fact, just yesterday the State Department issued a fact sheet with those numbers: 183 countries have signed the treaty and 157 have ratified. It sounds pretty impressive, unless you look behind the curtain and see that most of the countries that have signed and ratified are irrelevant to concerns about nuclear testing. For many, it was a goodwill gesture to sign and ratify the treaty. Among the latest signatories to the treaty are Trinidad and Tobago, and the latest countries to ratify include the Central African Republic and Ghana. Also, Indonesia just recently ratified and that *is* significant.

But the real concern lies with 11 states. Those 11 include the five permanent nuclear weapons states that are listed in the Nuclear Non-Proliferation Treaty (NPT). Those countries are the U.S., the UK, France, Russia, and China—the permanent members of the United Nations Security Council (P5). In addition, there are four non-P5 states that already possess nuclear weapons outside of the NPT: India, Pakistan, Israel, and North Korea. And, there are two states developing or interested in acquiring nuclear weapons or capabilities that could lead to a nuclear weapon: Iran and Syria. So, of those 11 states, what's the tally for the CTBT? Well, it's not very impressive. Only three of the 11 have ratified: the UK, France, and Russia. I will address each.

The UK's test site is our test site in Nevada. When we stopped testing in 1992, the British were *forced* to stop testing even though they were only days away from conducting their next nuclear test—not a happy ally.

France's story is different. After we stopped testing, the French continued nuclear testing. They continued until 1996 when they had completed their planned nuclear test series, which would enable them to baseline, design, and validate computer codes for a new series of nuclear warheads. The new warheads are similar in concept to the reliable replacement warhead that the U.S. has not been able to field because Congress won't approve the funding. At present, the French are producing and deploying these warheads on submarine-launched ballistic missiles and on air-delivered weapons.

The third country is, of course, Russia. Russia has ratified the CTBT. However, the Russians ratified it—according to a Russian expert writing in *RIA Novosti*, an official Russian publication—only after President Yeltsin and President Clinton met in October 1995 and the U.S. complied with the Russian demand to not define a nuclear test. This loophole in the CTBT would allow Russia to conduct its very-low-yield nuclear tests, which they planned. It was only after that side agreement was concluded that President Yeltsin agreed to ratify the treaty.

The point of discussing these 11 countries of most relevance for the CTBT is to note that only three have ratified and eight have not; the treaty is unlikely to ever enter into force.

Issue two was the issue of political and diplomatic benefits accruing from U.S. ratification. Proponents of the treaty claim that greater cooperation on issues of nuclear non-proliferation will result. I won't go into this issue further because the NRC report does not deal with it at all. It is primarily a political and diplomatic issue. If you would like to read the reasons why those benefits are unlikely to ever materialize, the 2011 National Institute for Public Policy report deals with them all. Certainly, there is little evidence that our ceasing nuclear testing in 1992 has had any rallying effect on motivating others to forgo development and modernization of their nuclear arsenals or any nuclear testing. The NRC report is silent on these issues.

The last of the three criteria I want to address is that of sustaining an effective nuclear stockpile. For what purposes? For deterrence and assurance. The NRC report, in dealing with technical issues, does not deal explicitly with deterrence and assurance and what is required,

although the report touches briefly on those issues. I would encourage you to read the wording in the NRC report very carefully, because the authors took great pains to appropriately qualify their technical conclusions. Having been part of the support group for the Strategic Posture Commission, I can imagine the battles that members of the NRC study had over such wording.

For example, the NRC report includes a statement that the countries most capable of carrying out evasive nuclear explosive testing are Russia and China. The report then discusses evasive testing by others (Finding 4.8). The authors of the report conclude that such testing is unlikely to require the United States to return to nuclear explosive testing. Well, that is possibly true, but we don't know until we know the implications of the tests that are conducted by a potential adversary and how it will affect deterrence. What capabilities are being developed? How will the capability being developed affect assurance? The National Research Council also said, in Finding 4.12, that Russia and China are unlikely to develop and deploy new types of strategic nuclear weapons. Note the qualifier "strategic." Every word in the list of findings is important and should not be glossed over. "Strategic," likely means high-yield weapons, and multi-kiloton nuclear tests would be needed for such new developments.

Well, Russia and China already have a variety of weapons in their inventory that they deploy, on which they have nuclear test data, and we don't have any of these kinds of nuclear weapons in the U.S. inventory. Examples of these kinds of nuclear weapons are a 300-ton x-ray warhead, enhanced neutron warheads, clean, and low-yield nuclear warheads. They also have very-low-yield warheads for ballistic missiles with precision delivery that have been developed for the new Russian Bulava submarine-launched ballistic missile. These kinds of weapons developments are likely to also affect the second of the mission areas requiring the United States to have nuclear weapons; I am referring to assurance and extended deterrence. Extended deterrence is one aspect of our ability to assure our allies; the NRC report touches on this just a bit. It mentions that Russia could almost certainly field low-yield tactical weapons based on past designs *without* new nuclear explosion tests. These developments could be viewed as a threat by our allies and affect assurance. In fact, the way our allies view our military capabilities and our ability to provide for their security is an important issue; this is something that we've paid increasing attention to in the last few years.

Of importance, assurance is something that happens in the mind of an ally—it is a measure of the way an ally perceives the U.S. There are a variety of dimensions to assurance, only one of which is extended deterrence and our ability to provide nuclear weapons for deterrence.

Of interest, the day before the NRC report was issued, the journal *Turkish Weekly* provided a report on views in Turkey regarding Iran and the possible possession by Iran of a nuclear weapon. The *Turkish Weekly* reported that only 8.2 percent of Turkish citizens surveyed said they believed that NATO's security umbrella is sufficient and that Turkey should not develop its own nuclear weapons. In response to another question, 54 percent of the population surveyed believed that Turkey should acquire its own nuclear weapons if Iran has nuclear weapons. Certainly as you read the NRC report, one of the things you need to keep in mind is that, because the report's authors are dealing with technical issues, they do not address what might be required for deterrence and assurance. Deterrent effects exist in the minds of adversaries, and assurance effects in the minds of allies. So you need to read the findings in the report very carefully, with these limitations in mind.

I, like my colleagues here, also thought this was a much better report than the NRC's CTBT report produced in 2002. The current report is much more carefully worded. And, as you read through it, you take note of the highly qualified statements. Examples include Finding 1.1, which talks about our ability to conduct stockpile stewardship. The finding begins with the qualification, "provided that sufficient resources and the national commitment to stockpile stewardship are in place." Dr. Foster addressed that statement—it's a *huge* qualification. What is the likelihood that that will happen? We haven't seen it occur over the last couple of decades.

Another is Finding 2.22. This one is probably my favorite as the most highly qualified statement in the report. You have to read all these clauses very carefully to fully understand the intent. It reads: "[A]n on-site inspection (OSI) would have a high likelihood of detecting evidence of a nuclear explosion with yield greater than about 0.1 kilotons, provided that the event could be located with sufficient precision in advance and that the OSI was conducted without hindrance." Well, if the treaty doesn't come into force, there will be no on-site inspections; and if it does come into force, as Ambassador Robinson has pointed out, a country

trying to evade or conduct a clandestine test is likely to hinder the inspection.

I found the National Research Council report very thoughtful, but it is not a page-turner. It is something you have to read very carefully and weigh every word and try to divine what the authors meant. My compliments to them for being careful with the wording.

I conclude that there is little likelihood that the CTBT, a poorly constructed treaty, will ever come into force; that the political and diplomatic benefits of U.S. ratification are illusory and at best a hope, and there is a great deal of uncertainty regarding what is needed in the future for deterrence and assurance. Therefore, we should not legally commit ourselves to refraining from and giving up the option of nuclear testing in the future.

I think the Secretary of Defense's conclusion in September 2008 is still valid. Robert Gates stated that as long as the treaty is not verifiable and thus not enforceable, ratification would not be prudent.