



The Heritage Foundation

# Background

---

## Executive Summary

No. 1330

October 6, 1999

## THE COMPREHENSIVE TEST BAN TREATY AND U.S. NUCLEAR DISARMAMENT

*BAKER SPRING*

The 1996 Comprehensive Test Ban Treaty (CTBT) would bar participating states from conducting explosive tests of nuclear weapons. President Bill Clinton is pressing the Senate to approve ratification of the CTBT, and a Senate vote is scheduled for some time in the next two weeks. U.S. ratification is necessary to bring the treaty into force. The CTBT is a dangerous agreement, however, that would undercut the U.S. policy of nuclear deterrence and with it, national security.

The treaty contains a host of flaws. It is not adequately verifiable or enforceable. The most important flaw with the CTBT, however, is that it puts the United States irreversibly on the path to nuclear disarmament. This goal is, in fact, stated in the preamble to the treaty. The testing program remains an essential ingredient of the U.S. nuclear deterrent. If the weapons cannot be tested to prove their continued reliability, quality concerns eventually will require that they be withdrawn from the arsenal and the stockpile until there are none left.

To compensate for the absence of testing, the Clinton Administration has established the Science-Based Stockpile Stewardship Program (SBSS). It would require the Secretaries of Defense and Energy to certify annually that U.S. nuclear weapons are safe and reliable. If they cannot make such a certification, steps would be taken to

resume testing. Unfortunately, the SBSS is based more on wishful thinking than sound science. The technological challenges that must be surmounted are enormous.

### WHY THE CTBT IS AN IRREVERSIBLE STEP TOWARD NUCLEAR DISARMAMENT

There are at least nine reasons why adhering to the CTBT's ban on nuclear testing will lead inevitably to U.S. nuclear disarmament.

**REASON No. 1: Tests are necessary to discover safety and reliability problems with nuclear weapons already in the stockpile.** As of 1987, one-third of all nuclear weapons in the stockpile underwent post-deployment testing to resolve problems. In three-quarters of these cases, the problems were discovered as a result of testing.

---

Produced by  
The Kathryn and Shelby  
Cullom Davis International  
Studies Center

Published by  
The Heritage Foundation  
214 Massachusetts Ave., N.E.  
Washington, D.C.  
20002-4999  
(202) 546-4400  
<http://www.heritage.org>



**REASON No. 2: The CTBT will make it very difficult to meet new military requirements.**

Maintaining a stockpile of militarily effective nuclear weapons when the ways for meeting existing military requirements may change and altogether new military requirements may emerge can only be addressed through modernizing the nuclear force. The CTBT will bar the explosive testing of the refurbished weapons.

**REASON No. 3: The CTBT will make replacing aging delivery systems more difficult.** In the past, new nuclear weapons were designed and built for specific kinds of missiles. Some of these missiles, like the Minuteman III, are getting old. Under the CTBT, replacement missiles would have to be designed and built to the requirements of the warheads, as opposed to the integrated fashion used earlier.

**REASON No. 4: The CTBT will exacerbate problems of an aging nuclear stockpile.** When the United States was still conducting explosive tests and producing new weapons, it could replace weapons before serious aging concerns arose. Under the CTBT, the process of replacement will stop.

**REASON No. 5 The CTBT will constrain improvements in the safety of weapons in the stockpile.** Not all the weapons currently in the stockpile contain the full array of safety features. The inability to test will bar the creation of new nuclear weapons with the improved safety features.

**REASON No. 6. The Administration's nuclear stockpile maintenance program is based on unproven technology.** The SBSS program faces important scientific hurdles. Moreover, the treaty will bar nuclear tests that could be used to confirm that the new technologies are working as anticipated.

**REASON No. 7: The CTBT will exacerbate the problem of decreasing diversity in the stockpile.** By 2000, it is expected that there will be only nine types of nuclear warheads in the stockpile. In 1985, there were 30. Problems in just one type of weapon could result in the withdrawal of a large portion of the warheads from the active stockpile.

**REASON No. 8: The Clinton Administration, and perhaps future administrations, will find ways to "fudge" the certification process regarding the safety and reliability of nuclear weapons.** To protect the CTBT and not be forced into withdrawing the United States from the treaty, the Secretaries of Defense and Energy may be asked not to look too hard for problems in the stockpile.

**REASON No. 9: Forces outside the control of the Clinton Administration could undermine both the withdrawal pledge and the SBSS program over time.** While President Clinton can shape the policy for maintaining the safety, reliability, and effectiveness of U.S. nuclear weapons under the CTBT, future administrations are not bound by it. Congress in the future may choose not to fund the SBSS program. And heavy pressure from foreign states and arms-control groups may prompt future administrations to abandon the program.

Members of the Senate should recognize that the practical effect of ratification of the Comprehensive Test Ban Treaty will be eventual U.S. nuclear disarmament. The United States cannot maintain a stockpile of safe, reliable, and effective nuclear weapons if it is barred from testing them. The Senate should uphold the existing policy of nuclear deterrence, which more than any other policy has protected the nation and its vital interests since the end of World War II.

—*Baker Spring is a Research Fellow in the Kathryn and Shelby Cullom Davis International Studies Center at The Heritage Foundation.*



The Heritage Foundation  
**Background**

---

214 Massachusetts Avenue, N.E. Washington, D.C. 20002-4999 • (202) 546-4400 • <http://www.heritage.org>

No. 1330

October 6, 1999

## THE COMPREHENSIVE TEST BAN TREATY AND U.S. NUCLEAR DISARMAMENT

*BAKER SPRING*

The 1996 Comprehensive Test Ban Treaty (CTBT) is a multilateral treaty that would bar participating states from conducting explosive tests of nuclear weapons. President Bill Clinton is pressing the Senate to approve ratification of the CTBT, and Senate Majority Leader Trent Lott (R-MS) has scheduled a vote for sometime in the next two weeks. U.S. ratification is necessary to bring the treaty into force. The CTBT is a dangerous agreement, however, that would undercut the U.S. policy of nuclear deterrence and, with it, U.S. national security.

The CTBT contains a host of serious flaws. It is not verifiable, for example, because the seismic monitoring system for detecting nuclear tests will not be able to detect prohibited tests of very low yields.<sup>1</sup> The CTBT is not enforceable because ultimate enforcement powers are lodged in the United Nations Security Council, where China and Russia can veto effective responses to non-compliance.

The most important flaw with the CTBT, however, is that it puts the United States irreversibly on the path to nuclear disarmament. This goal is, in fact, stated in the preamble to the treaty. It declares

that “the cessation of all nuclear weapon test explosions and all other nuclear explosions...constitutes an effective measure of nuclear disarmament and non-proliferation in all its aspects....”<sup>2</sup>

The testing program remains an essential ingredient of the U.S. nuclear deterrent. If the weapons cannot be tested to prove their continued reliability, quality concerns eventually will require that they be withdrawn from the arsenal and the stockpile until there are none left. Further, the CTBT will prevent the modernization of the nuclear arsenal, including the missiles that carry nuclear weapons. If the current missiles cannot be replaced with new, more modern missiles, they likewise will have to be withdrawn. This is because the U.S. builds nuclear

---

Produced by  
The Kathryn and Shelby  
Cullom Davis International  
Studies Center

Published by  
The Heritage Foundation  
214 Massachusetts Ave., N.E.  
Washington, D.C.  
20002-4999  
(202) 546-4400  
<http://www.heritage.org>



- 
1. See, for example, Robert Suro, “CIA Is Unable to Precisely Track Testing,” *The Washington Post*, October 3, 1999, p. 1.
  2. “The Comprehensive Nuclear Test Ban Treaty,” p. 1. Available at <http://www.acda.gov/treaties/ctbtreat.htm>.

weapons specifically for new missiles. A new missile will require a new weapon, which cannot be built without testing. The inevitable result of adherence to the CTBT is that at some future time, the U.S. no longer will have a nuclear deterrent.

This outcome should be unacceptable. Even the Clinton Administration states that it is necessary to maintain the U.S. nuclear deterrent. The Administration, however, has wrongly asserted that the CTBT will not lead to U.S. nuclear disarmament. It seems to want to hide the fact that disarmament for the U.S. is the inevitable result of the CTBT. The Senate needs to reveal the truth to American people and prevent the loss of the U.S. nuclear deterrent as the most critical military capability for preventing foreign attacks on America and its vital interests.

## **A BRIEF HISTORY OF THE CTBT**

The effort to negotiate a ban on nuclear testing goes back to the Eisenhower Administration. The first discussions started in May 1955 under the auspices of the United Nations Disarmament Commission. The talks became bogged down over whether nuclear disarmament should precede a test ban and verification. Following years of little progress, President John F. Kennedy announced that a conference with the governments of the United States, Great Britain, and the Soviet Union would convene in Moscow to discuss the issue. The conference met in July 1963, after the Soviets expressed interest in a treaty that would ban nuclear tests in the Earth's atmosphere, outer space, and underwater, but not underground. The conference resulted in the August 5, 1963, signing of the Limited Test Ban Treaty, which was approved by the Senate the next month and ratified by President Kennedy on October 7, 1963. Following the Treaty's entry into force, the U.S. confined its nuclear tests to underground facilities.

Throughout the late 1960s, the issue of nuclear testing received little attention. In the 1970s, however, two treaties that further limited nuclear testing were signed. The first of these treaties, called

the Threshold Test Ban Treaty (TTBT), prohibits underground nuclear tests with yields in excess of 150 kilotons. President Richard Nixon signed the TTBT on July 3, 1974. The second treaty imposed similar limitations on the yields of nuclear detonations for "peaceful purposes," such as earthmoving, and is called the Peaceful Nuclear Explosions Treaty (PNET). President Gerald Ford signed this treaty on May 28, 1976. Both treaties were not ratified until 1990 because of concerns about their verifiability, which were not allayed until the addition of verification protocols.

In 1977, President Jimmy Carter resumed negotiations on a comprehensive nuclear test ban agreement between the United States, Great Britain, and the Soviet Union. The Reagan Administration, however, questioned the wisdom of a comprehensive test ban and discontinued the negotiations in 1982.

President George Bush continued the policies of the Reagan Administration, but Members of Congress came to support a moratorium on nuclear testing. Moratorium legislation was adopted by Congress in 1992 and incorporated into that year's Energy and Water Appropriations Act. President Bush, who supported other programs funded by the legislation, signed it into law on October 2, 1992.<sup>3</sup> The United States conducted its last nuclear test in 1992. Since India and Pakistan conducted nuclear tests last year, however, the moratorium on U.S. testing, under the terms of the law, is lifted. Nevertheless, the Clinton Administration has continued to observe the moratorium.

Shortly after assuming office in 1993, the Clinton Administration moved to resume negotiations on the CTBT. In 1994, negotiations continued under the auspices of the United Nations Conference on Disarmament in Geneva. In an attempt to move the negotiations forward, President Clinton announced on August 11, 1995, that the U.S. would support a "zero yield" standard for banning nuclear testing under the CTBT. This meant that the CTBT would ban all nuclear test explosions, no matter how small their yields.<sup>4</sup> The Clinton

3. Energy and Water Development Appropriations Act, 1993, Public Law 102-377, sec. 507.

Administration also announced a series of requirements for the maintenance of the U.S. nuclear stockpile in the absence of testing. The Clinton Administration pledged that if one of these requirements was not met it would invoke the supreme interest clause under the CTBT, which allows for withdrawal from the treaty, and resume testing.

The Conference on Disarmament failed to approve the CTBT in 1996 because of India's objections. Normally, an arms control treaty cannot be opened for signature without the unanimous support of the participating states. To circumvent India's veto, a resolution of endorsement of the CTBT was offered in the United Nations General Assembly. The resolution was adopted on September 10, 1996, and the treaty was then opened for signature. President Clinton signed it on September 24, 1996.

On September 22, 1997, President Clinton transmitted the CTBT to the Senate for its consideration. Pursuant to Senate rules, the treaty was given to the Senate Foreign Relations Committee. Under the terms of an October 1, 1999, unanimous consent agreement, however, the Senate will begin consideration of the CTBT without the Foreign Relations Committee having acted on the treaty. The Senate will begin its debate on October 8, and a final vote on ratification is likely to occur during the week of October 11.

## NUCLEAR WEAPONS ARE COMPLEX PRODUCTS

Although the CTBT is a long and complicated document (see the summary in the Appendix) and raises many important questions regarding national security, the most important issue Senators will have to address is whether the United

States can maintain a safe, reliable, and effective nuclear deterrent without testing. Answering this question first requires understanding what goes into a nuclear weapon.

Nuclear weapons generally are divided into two categories based on the kind of fissile material used in the core. The first type of material is plutonium 239 (Pu-239). In this case, the core is surrounded by a high explosive charge in a precise configuration so that when the explosive is detonated it compresses the plutonium to the point that it produces neutrons and initiates a chain reaction that results in a nuclear explosion. The second kind of fissile material is uranium 235 (U-235). In the case of uranium, two slugs of the material are hurled into each other through the detonation of conventional explosives with sufficient force to initiate the chain reaction and result in a nuclear explosion. In both cases, highly sophisticated switching devices are used to trigger the explosive detonators simultaneously.<sup>5</sup>

This oversimplified description of how nuclear weapons work is hardly sufficient for conveying the complex process involved in designing, building, and maintaining such weapons. The fact is that the weapons in today's stockpile and the delivery systems to which they are mated are exceedingly complicated. U.S. nuclear weapons consist of several thousand components.<sup>6</sup> It is also important for Senators to keep in mind that not all nuclear weapons are the same. The current U.S. inventory—the one the nation will be required to live with under the CTBT because the treaty will all but bar the modernization of the arsenal—consists of highly sophisticated weapons. They are far more dependent on a rigorous testing program than the relatively crude terror weapons that Third World states may find appealing. That these

4. This represented a sharp departure from the treaty envisioned by previous Presidents. Even the Carter Administration anticipated that this treaty would allow explosive tests below certain yields to insure the integrity of the nation's nuclear stockpile, and because it is nearly impossible to detect violations of a ban on low-yield explosions.
5. Kathleen C. Bailey, *Doomsday Weapons in the Hands of Many: The Arms Control Challenge of the '90s* (Urbana and Chicago: University of Illinois Press, 1991), pp. 13–15.
6. Kathleen C. Bailey, "The Comprehensive Test Ban Treaty, The Costs Outweigh the Benefits," *Cato Institute Policy Analysis* No. 330, January 15, 1999, p. 7.



sophisticated designs require testing is revealed in a statement by the Director of the Los Alamos National Laboratory, in which he acknowledges that he would not certify a new nuclear weapons design of the general type in today's stockpile without first testing it.<sup>7</sup>

Testing is an important tool for detecting problems with weapons already in the stockpile. As of 1987, one-third of all nuclear weapons that had entered the stockpile underwent post-deployment testing to resolve problems. In three-quarters of these cases, the problems were discovered as a result of testing.<sup>8</sup> A former assistant to the Secretary of Defense for nuclear programs and weapons designer has testified that during a period of over five years of service he recommended that an entire class of nuclear weapons be "redlined" once a year on average.<sup>9</sup> Redlining effectively removes all the weapons of the relevant class from the inventory until the problems are resolved. In each case, the redlining was ordered because of safety and reliability concerns.

The burden associated with maintaining the U.S. nuclear deterrent is increased by the fact that military requirements may change. When the United States conducted nuclear tests, the accepted approach was to modernize the force to meet new requirements. Modernizing the force by building new nuclear weapons would be all but barred by a ban on nuclear testing.<sup>10</sup>

Additional complexity is introduced because of the problems associated with an aging stockpile. The physical properties of fissile materials, particularly as they age, are not fully understood. Nevertheless, technicians do know that plutonium is a volatile material, and as it ages and undergoes radioactive decay, it produces impurities and byproducts (such as helium bubbles) that can alter key properties of the material (density and strength). These changes may, in turn, affect the ability of the weapon assembly to achieve supercritical mass upon detonation.<sup>11</sup> The fissile material is not the only element of nuclear weapons subject to the stresses of aging. The high explosive component of nuclear weapons also degrades over time.<sup>12</sup> A consistent process of modernizing the arsenal, which was used in the past, allowed older weapons to be replaced with new ones on a routine basis. A ban on nuclear testing will severely constrain modernization programs, which will likely lead to new problems as the stockpile ages.<sup>13</sup>

The magnitude of the effort to ensure that the weapons will remain safe, reliable, and effective is quite large. Designing, building, and maintaining nuclear weapons, although of reduced scale from the Cold War era, are still large and complex tasks. The Department of Defense is likely to spend between \$6 billion and \$8 billion per year on strategic nuclear forces, including delivery systems, in the coming years.<sup>14</sup> The Department Energy at the same time will receive about \$14 billion per year

7. Letter from S. S. Hecker to Senator Jon Kyl (R-AZ), September 24, 1997.
8. George H. Miller, Paul S. Brown and Carol T. Alonso, "Report to Congress on Stockpile Reliability, Weapon Remanufacture, and the Role of Nuclear Testing," Lawrence Livermore National Laboratory, 1987, p. 2.
9. Robert B. Barker, Testimony before the Senate Subcommittee on International Security, Proliferation, and Federal Services, October 27, 1997.
10. Bailey, "The Comprehensive Test Ban Treaty, The Costs Outweigh the Benefits," pp. 4-5.
11. Nadine Shea, ed., *Nuclear Weapons Technology: Focus on the Stockpile* (Los Alamos: Los Alamos National Laboratory, 1997), p. 15.
12. *Ibid.*
13. James R. Schlesinger, Testimony before the Senate Subcommittee on International Security, Proliferation and Federal Services, October 27, 1997.
14. Department of Defense, *Annual Report the President and the Congress* (Washington, D.C.: U.S. Government Printing Office, 1998), p. 60.

from the defense budget, much of which will go to nuclear programs.<sup>15</sup>

Extraordinarily high reliability rates are necessary for these weapons. In the past, the Department of Energy thought it necessary to achieve reliability goals for nuclear warheads of somewhere between 99 and 99.5 percent.<sup>16</sup> A nuclear weapon mounted on a ballistic missile must work at this high level of reliability despite exposure to extreme environments, including the force of rapid acceleration associated with launch, the sub-zero temperatures of space, the high heat of re-entry, the rapid deceleration of re-entry, and a possible impact with the ground.<sup>17</sup>

Finally, safety is a critical issue. Not all the weapons in the stockpile today have modern safety features. Some lack one or more of the following features: 1) insensitive high explosives, 2) fire-resistant pits (cores), and 3) enhanced safety mechanism regarding nuclear detonation.<sup>18</sup> Building new weapons, which will require testing in almost every instance, is the proper way to address these safety problems. Therefore, the weapons lacking specific safety features can be retired.

The United States conducted its last nuclear test in 1992 as a result of a unilateral testing moratorium. According to an assistant to a previous Secretary of Defense, the confidence in the nuclear stockpile has declined since that time.<sup>19</sup> In the past, the United States relied on a consistent program of testing the weapons in underground explosive tests to achieve very high levels of confidence in their performance. The question now facing the Senate is whether making this policy of self

denial permanent will deprive the U.S. nuclear weapons complex of something that is essential.

## THE CLINTON ADMINISTRATION'S STOCKPILE STEWARDSHIP PLEDGE

Even the Clinton Administration, with its determination to halt U.S. nuclear tests, has found it necessary to acknowledge that it is not a given that the U.S. can still maintain a safe and reliable nuclear deterrent without testing. With this in mind, the Administration adopted a program for maintaining the nuclear arsenal, absent testing, called the Science-Based Stockpile Stewardship (SBSS) program in November 1993. In August 1995, the Administration linked SBSS to a new procedure for certifying the safety and reliability of U.S. nuclear weapons. Under this procedure, the Secretaries of Defense and Energy must certify annually to the President that U.S. nuclear weapons are safe and reliable. If they cannot certify the safety and reliability of a type of weapon critical to the U.S. nuclear deterrent, testing will resume.<sup>20</sup>

The August 1995 announcement also included an important pledge in terms of the CTBT: If certification of the safety and reliability of nuclear weapons could not be made, the Administration would, in consultation with Congress, exercise the right of the United States to withdraw from the treaty. Withdrawal would be exercised under the supreme interest clause (what became a provision of Article IX) in the treaty. Following withdrawal, testing would resume.

The Administration's formal announcement regarding annual certification and possible future withdrawal from the then unsigned CTBT was a

15. Department of Defense, "FY 2000 Defense Budget," February 1, 1999.

16. Donald R. Cotter, "Peacetime Operations, Safety and Security," in Ashton B. Carter, John D. Steinbruner and Charles A. Zraket, eds., *Managing Nuclear Operations* (Washington, D.C.: The Brookings Institution, 1987), p. 53.

17. Schlesinger, Testimony before the Senate Subcommittee on International Security, Proliferation and Federal Services, *op. cit.*

18. Hecker letter to Senator Kyl *op. cit.*

19. Robert B. Barker, Testimony before the Senate Subcommittee on International Security, Proliferation, and Federal Services, October 27, 1997.

20. The White House, Press Briefing, August 11, 1995.

curious statement. Although the President attended the press briefing at which the announcement was made and alluded to relevant provisions of a formal statement, a staff member of the National Security Council, Robert Bell, actually made the formal statement regarding both the certification procedure and possible withdrawal from the CTBT. This raises the question of whether the President himself feels bound by the statement.

Whatever the answer, the history of arms control since the end of World War II demonstrates that the United States virtually never withdraws from arms control treaties, even when withdrawal is fully justified. The best example of this is the 1972 Anti-Ballistic Missile (ABM) Treaty, which barred the deployment of a national missile defense by either the United States or the Soviet Union. In 1986, the Reagan Administration discovered that the Soviet Union was constructing a radar facility near the town of Krasnoyarsk in Siberia in violation of the treaty, to which Soviet Foreign Minister Eduard Shevardnadze admitted in 1989.<sup>21</sup> In early 1991, Iraq's armed forces used missiles against U.S. and allied forces in the Persian Gulf War. This demonstrated how missile proliferation was starting to jeopardize the supreme interests of the United States. Throughout all this, America continued to honor the treaty. Later in 1991, the Soviet Union disintegrated and the strategic rationale for the treaty disappeared. Nevertheless, the United States continued to observe the treaty unilaterally. By 1998, it became clear that no single state or combination of states that emerged from the former Soviet Union was capable of fulfilling the obligations assumed by the Soviet Union under the treaty.<sup>22</sup> Yet the Clinton White House has extended the policy of unilaterally observing the treaty.

If the Clinton Administration is willing to honor unilaterally a fatally flawed treaty that is no longer

legally binding, it is highly unlikely that the Administration or future administrations will ever find sufficient justification to withdraw from the CTBT.

## **WHY THE CTBT IS AN IRREVERSIBLE STEP TOWARD NUCLEAR DISARMAMENT**

The Administration's pledge regarding the annual certification and withdrawal from the CTBT will not serve to protect the U.S. nuclear stockpile from being undermined by questions about its safety, reliability, and effectiveness. There are at least nine reasons why the CTBT will lead inevitably to U.S. nuclear disarmament.

**REASON No. 1: Tests are necessary to discover safety and reliability problems with nuclear weapons in the present stockpile.** Absent such tests, a serious problem with a particular type of weapon may be completely overlooked. As of 1987, one-third of all nuclear weapons that had entered the stockpile underwent post-deployment testing to resolve problems. In three-quarters of these cases, the problems were discovered because of testing. Periodic testing of weapons in the stockpile tell the scientists, engineers, and technicians at the nuclear laboratories things they may not know and reveal problems that they would otherwise have no reason to believe are present.

**REASON No. 2: The CTBT will constrain modernization in ways that will make it very difficult to meet new military requirements.** Although the SBSS program is designed to address the question of how to maintain a stockpile of safe and reliable nuclear weapons, it does not directly address the question of how to maintain a stockpile of militarily effective weapons when the ways of meeting existing military

21. It is now known that the Krasnoyarsk radar was only the most visible violation of the ABM Treaty undertaken by the Soviet Union. The Soviet Union, in fact, undertook a pattern of violations that constituted a circumvention of the treaty's basic obligation not to deploy a national missile defense system. See William T. Lee, *The ABM Treaty Charade: A Study in Elite Illusion and Delusion* (Washington, D.C.: Council for Social and Economic Studies, 1997).

22. David B. Rivkin, Jr., Lee A. Casey, and Darin Bartram, "The Collapse of the Soviet Union and the End of the 1972 Anti-Ballistic Missile Treaty: A Memorandum of Law," The Heritage Foundation, June 15, 1998.



requirements can change and altogether new military requirements can emerge. This can only be addressed through modernizing the nuclear force. The Administration plans to use SBSS to refurbish existing weapons, in lieu of building new ones, which may alter the capability of the weapons.<sup>23</sup> But this process will introduce new variables into the workings of the weapons through the addition of new and different components. The CTBT itself will bar explosive testing of the refurbished weapons to determine whether their new components will work as expected and prove able to meet military requirements.

**REASON No. 3: The CTBT will constrain modernization in ways that will make replacing aging delivery systems more difficult.** In the past, new nuclear weapons were designed and built for specific kinds of missiles. Some of these missiles are getting old. The Minuteman III intercontinental ballistic missile (ICBM), for example, was first deployed in the early 1970s. Although programs are underway to extend the service lives of missiles like the Minuteman III, they cannot remain in the arsenal forever. Replacing them will require designing, building, and deploying entirely new missiles. Under the CTBT, the missiles would have to be designed and built to the requirements of the warheads, as opposed to the combined fashion used earlier. This engineering process could lead to deployed weapons systems that are less capable of fulfilling the missions for which they are intended.

**REASON No. 4: The CTBT will exacerbate problems associated with an aging nuclear stockpile.** The effects of aging on nuclear weapons were not a serious concern when the United States was still conducting explosive tests and producing new weapons that could replace existing ones before serious aging concerns arose. Under the CTBT, the United States will not be able to produce new nuclear weapons and the process of replacement will stop. The

SBSS program would attempt to address this problem only through refurbishment. Refurbishment may only partially solve the aging problem because the fissionable material in the cores (pits) will remain the same. Nuclear scientists know the key properties of this material change over time and could result in the weapon assembly being unable to reach the necessary supercritical mass at detonation.

**REASON No. 5 The CTBT will constrain improvements in the safety of weapons in the stockpile.** Although the Clinton Administration tends to view questions related to maintaining the safety and reliability of existing nuclear weapons as separate from questions about modernizing the force, the two issues, in fact, are closely related. This is because not all the weapons currently in the stockpile contain the full array of safety features. Some weapons lack insensitive high explosives. Others lack fire-resistant cores (pits). The appropriate way to resolve these problems would be to replace the existing weapons with new ones containing the enhanced safety features. The inability to test will bar the creation of new nuclear weapons with improved safety features.

**REASON No. 6. The Administration's nuclear stockpile maintenance program is based on unproven technology.** The Clinton Administration portrays the SBSS program as very likely to succeed in its mission of guaranteeing the safety and reliability of nuclear weapons in the U.S. stockpile. The impression given is that whatever problems the SBSS program faces are really management problems. This is not the case. The SBSS program faces important scientific hurdles as well. For example, the SBSS will rely on machines capable of making X-ray movies of imploding nuclear weapons without producing nuclear yields. Other machines will create pressure and temperature environments that previously were associated only with nuclear weapons and stellar objects. Indeed, one weapons designer

23. Such alterations were made to the existing B61-7 nuclear bomb, which was redesignated the B61-Mod 11, to make it capable of meeting a new military requirement to destroy deeply buried bunkers.

described the future realization of each goal of the SBSS as “a significant scientific achievement.”<sup>24</sup> The problems associated with clearing these scientific hurdles are compounded by the fact that the treaty will bar nuclear tests that could be used to confirm that the new facilities are working as anticipated and to calibrate their functions.

**REASON No. 7: The CTBT will exacerbate the existing problem of decreasing diversity in the weapons stockpile.** By 2000, it is expected that there will be only nine types of nuclear warheads in the stockpile. In 1985, the stockpile contained 30 types of warheads. Problems with just one type of weapon could result in the temporary withdrawal of a large portion of warheads from the active stockpile. The proper response to declining diversity in the stockpile is to add new weapons to replace earlier ones. The prohibition on nuclear explosive testing resulting from ratification of the CTBT will foreclose this option.

**REASON No. 8: The Clinton Administration, and perhaps future administrations, will find ways to “fudge” the certification process regarding the safety and reliability of nuclear weapons.** In a moment of candor, President Clinton revealed how the bureaucracy has been motivated to downplay findings of fact regarding the activities of foreign states in order to avoid triggering economic sanctions laws. The President stated: “What always happens if you have automatic sanctions legislation, is it puts enormous pressure on whoever is in the executive branch to fudge an evaluation of the facts of what is going on.”<sup>25</sup>

This same motivation will be present when it comes to the certification of the safety and reliability of nuclear weapons. First, a failure to certify will be seen by the managers of the SBSS program as a sign that their program has failed. They will wish to do all they can to

avoid finding reasons not to certify to the safety and reliability of nuclear weapons. Second, the Clinton Administration, and perhaps future administrations, will want to protect the CTBT and not be forced into withdrawing the United States from the treaty. As a result, President Clinton will likely make it clear to his Secretaries of Defense and Energy, the Cabinet officers responsible for issuing the certifications, that they should not look too hard for problems in the stockpile. In the end, these motivations are likely to corrupt the certification process, just as President Clinton stated was happening regarding the sanctions process, and allow an uninterrupted decline in the safety and reliability of weapons in the stockpile.

**REASON No. 9: Forces outside the control of the Clinton Administration could undermine both the withdrawal pledge and the SBSS program over time.** While President Clinton can shape the policy for maintaining the safety, reliability, and effectiveness of U.S. nuclear weapons under the CTBT, the policy is also under the control of others, such as:

- **Foreign States.** The preamble to the treaty makes it clear that the cessation of testing is itself presumed to result in nuclear disarmament over time. Foreign states could argue that the U.S. policy of retaining nuclear weapons indefinitely, although not a violation of any specific provision of the treaty, is contrary to its spirit and intent. In the face of such criticisms of the stockpile maintenance program, which are likely to be sharp and loud, a future administration may buckle and abandon the program.
- **Future Administrations.** Article IX of the CTBT states that the treaty will be of unlimited duration. The Clinton Administration’s commitments to annual certification of the nuclear stockpile and the policy

24. Robert B. Barker, Testimony before the Senate Subcommittee on International Security, Proliferation, and Federal Services, October 27, 1997.

25. Elaine Sciolino, “Clinton Argues for ‘Flexibility’ Over Sanctions,” *The New York Times*, April 28, 1998, p. A-1.

of possible future withdrawal from the CTBT, however, can apply only for the life of the administration. Future administrations will be under no obligation to honor these commitments.

- **Congress.** The SBSS program can be overturned by Congress at any time. A simple refusal to fund it will result in its termination. It can be expected that foreign interests and domestic arms control advocacy groups will lobby Congress very heavily to abandon the annual certification requirement and the stockpile stewardship program as soon as the United States has ratified the CTBT.
- **Arms Control Advocacy Groups.** Both international and domestic arms control advocacy groups have made it clear that their goal is U.S. nuclear disarmament. At the international level, the Canberra Commission on the Elimination of Nuclear Weapons leads the nuclear disarmament effort.<sup>26</sup> At the domestic level, a number of groups are advocating U.S. nuclear disarmament under an umbrella organization called the Coalition to Reduce Nuclear Dangers.<sup>27</sup> Several of the member organizations have issued reports urging complete nuclear disarmament.<sup>28</sup> Both the international and domestic advocacy groups support the CTBT in the context of their goal of nuclear disarmament. They certainly have no interest in a process that might justify the resumption of testing. Indeed, some have already launched

assaults on the SBSS program to further their agenda.<sup>29</sup>

## CONCLUSION

The preamble of the Comprehensive Test Ban Treaty states that it is the intent of its framers to achieve nuclear disarmament. It also states that nuclear disarmament will be the result because “constraining the development and qualitative improvements of nuclear weapons and ending the development of advanced new types of nuclear weapons, constitutes an effective measure of nuclear disarmament....” Whether or not, as the second statement asserts, the cessation of nuclear explosive testing will effectively eliminate all types of nuclear weapons, including the relatively crude and unreliable weapons that rogue states may wish to obtain, is debatable. The statement is highly accurate, however, regarding the neutralization of the sophisticated weapons in the U.S. stockpile because of the high standards required for them to remain in the stockpile. It is also true that many of the treaty’s supporters want the United States to disarm.

Today, the Clinton Administration, even though it is one of the framers of the Comprehensive Test Ban Treaty, states that it is not attempting to use the treaty to achieve U.S. nuclear disarmament. Its denials, however, are at odds with the text and intent of the treaty. It seems apparent that the Clinton Administration, in reality, shares the disarmament goal of other treaty backers. It may be attempting to hide this fact by proposing an ineffective program for nuclear weapons stewardship

26. See “Report of the Canberra Commission on the Elimination of Nuclear Weapons,” August 14, 1996.

27. The Statement of Principles for the Coalition to Reduce Nuclear Dangers states in part: “Develop and articulate a national strategy to move in a step by step programs toward the elimination of all nuclear weapons by reducing existing nuclear arsenals and by prevent new nuclear threats from emerging.”

28. For example, the Henry L. Stimson Center has entire project on “Eliminating Weapons of Mass Destruction.” The project is designed to encourage the serious consideration of policies for eliminating all weapons of mass destruction, including nuclear weapons. The project released a major report on nuclear disarmament in 1997. See Andrew Goodpaster, et al., “An American Legacy: Building a Nuclear-Free World,” Final Report of the Steering Committee, Project on Eliminating Weapons of Mass Destruction, The Henry L. Stimson Center, March 1997.

29. Christopher E. Paine and Matthew G. McKinzie, “Does the U.S. Science-Based Stockpile Stewardship Program Pose a Proliferation Threat,” Natural Resources Defense Council, November, 1998.

and offering a pledge to withdraw from the treaty in the future—a pledge which this Administration will not be in a position to honor even if that is its intention.

Members of the Senate should not be fooled. The practical effect of ratification of the Comprehensive Test Ban Treaty will be eventual U.S. nuclear disarmament. The United States cannot maintain a stockpile of safe, reliable, and effective nuclear weapons if it is barred from testing them for an extended period of time. The Clinton Administration's advocacy of the Comprehensive

Test Ban Treaty, as much as that of its more vocal supporters, represents a leap into the unknown. Indeed, the future survival of the country could well be at stake in the Senate's debate over the ratification of this treaty. The Senate should uphold the existing policy of nuclear deterrence, which more than any other policy has protected the nation and its vital interests since the end of World War II.

—*Baker Spring is a Research Fellow in the Kathryn and Shelby Cullom Davis International Studies Center at The Heritage Foundation.*



## APPENDIX

### PROVISIONS OF THE COMPREHENSIVE TEST BAN TREATY

As has become commonplace with multilateral arms control agreements, the CTBT is a lengthy and complex document, consisting of three components. The text of the treaty itself includes a preamble and 17 articles. Integral to the treaty, the CTBT also contains two annexes and a protocol. A brief description of the articles, annexes, and protocol follow.

**Preamble to the treaty.** The preamble to the CTBT establishes the historic context of the treaty, defines the spirit behind the treaty, and spells out what is intended by its entry into force and implementation. The most important element of the preamble is its declaration that it is the intention of the framers to use it as a means for achieving nuclear disarmament. It is their view that a ban on nuclear testing, by constraining improvements to existing nuclear weapons and ending the development of new weapons, will eventually result in disarmament.

**Article I.** This article describes the core purposes of the treaty. It bars participating states from conducting “any nuclear weapon test explosion or any other nuclear explosion” at any place under its control. Further, participating states pledge not to encourage or participate in nuclear test explosions carried out by other states or in other jurisdictions.

**Article II.** This provision establishes the treaty’s implementing body, called the Comprehensive Nuclear Test-Ban Treaty Organization. The organization will consist of three elements. The Conference of States Parties includes representatives of all the participating states and is responsible for directing the activities of the organization at the broadest level. The Executive Council includes the representatives of 51 of the participating states, which are chosen based on geographical distribution. The Executive Council, as its name implies, fulfills the executive functions of the organization. The Technical Secretariat is responsible for managing the monitoring activities included in later articles of the treaty and the protocol attached to treaty.

**Article III.** Article III imposes a responsibility on states parties to devise ways to implement the treaty. These include adopting national legislation to outlaw the activities prohibited by the treaty and to establish an office in the national government to serve as a liaison with the Comprehensive Nuclear Test-Ban Treaty Organization.

**Article IV.** This provision establishes the verification regime. This regime includes: 1) an international monitoring system, which includes a variety of sensor systems for detecting nuclear explosions; 2) a procedure for resolving questions related to noncompliance with the treaty; 3) an on-site inspection process; and 4) confidence-building measures to promote the sharing of information among states parties and the Comprehensive Nuclear Test-Ban Treaty Organization to resolve concerns related to noncompliance.

The international monitoring system is quite elaborate. It includes four kinds of monitoring facilities to be located throughout the world. They include seismological, radionuclide, hydroacoustic, and infrasound monitors.

The procedure for resolving compliance problems is designed to allow resolution of claims of suspicious behavior or noncompliance without resorting to an on-site inspection. The procedure would have the Executive Council of the Comprehensive Nuclear Test-Ban Treaty Organization play mediator between the state charging suspicious behavior and the state being charged.

The on-site inspection regime established in Article IV would be triggered by a state submitting a request for such an inspection on the territory of another state. The Executive Council can approve the request if 30 of its 51 members vote for it.

The confidence-building provision is designed to prevent misinterpretations of verification data arising from the non-nuclear activities of participating states, particularly chemical explosions. The provision encourages state parties to cooperate with each other and the Comprehensive

Nuclear Test-Ban Treaty Organization to avoid such misinterpretations.

**Article V.** This article establishes the enforcement mechanism. The failure by a state party to redress a compliance problem could result in the restriction or suspension of treaty rights for that state, the recommendation of “collective measures” by other states parties to the treaty, and in the most serious cases a referral to the United Nations for consideration. The specific types of collective measures that may be adopted or options for the United Nations are not defined in the treaty.

**Article VI.** Article VI creates a mechanism for settling disputes. This mechanism provides for the involvement of both the Executive Council and the Conference of States Parties to assist in the resolution of such disputes. Under certain circumstances the International Court of Justice, an arm of the U.N., established to mediate disputes among states on a full range of matters, could be called on to settle specific disputes over the meaning of treaty provisions.

**Article VII.** This provision establishes the procedure for amending the treaty. Any state that is a party to the treaty may propose an amendment. Such proposals are to be considered by formal amendment conferences, which may be convened if a majority of states agree. Amendments are adopted if a majority of the states vote in favor of it and no state objects.

**Article VIII.** Article VIII authorizes the convening of review conferences to assess the effectiveness of the treaty at ten-year intervals following entry into force. In the first such review conference, the question of allowing peaceful nuclear explosions will be addressed. The approval of such explosions would require a consensus of participating states.

**Article IX.** This article declares that the treaty shall be of unlimited duration. It also establishes the procedure for a state to withdraw from the treaty. To withdraw, a state must describe how extraordinary events related to the treaty have jeopardized its supreme interests and provide

other states parties six months notice before withdrawal.

**Article X.** This provision states that the two annexes and the protocol are integral parts of the treaty. It means that the annexes and protocol, along with the text of the treaty itself, are considered a single agreement.

**Article XI.** Article XI states that any state may sign the treaty before it enters into force.

**Article XII.** This article describes the ratification procedure for the treaty. It allows each state to ratify the treaty in accordance with its constitution.

**Article XIII.** This provision describes how any state that has not signed the treaty prior to entry into force may join at a later date.

**Article XIV.** Article XIV sets the procedure for bringing the treaty into force. It states that the treaty shall become effective 180 days after the date that the last of 44 specifically identified countries has deposited its instrument of ratification, as long as it is not earlier than two years following the date the treaty was opened for signature. This article also calls for the convening of a conference to consider steps for accelerating the ratification process if the treaty has not entered into force by the end of a four-year period following the date the treaty was opened for signature. Finally, this article establishes the entry into force procedure for the countries that accede to its terms. For these states, entry into force will occur on the 30th day following accession.

**Article XV.** This provision prohibits reservations to the treaty. A reservation allows a country to declare a circumstance under which it will consider itself to be exempt from a provision of a treaty, or even the treaty as a whole. Article XV also prohibits reservations to the protocol to the treaty if they are incompatible with the object and purpose of the treaty.

**Article XVI.** This article designates the Secretary General of United Nations to serve as the depositary of the treaty. It means that he will receive treaty signatures; instruments of ratification and

accession; and keep a record of which states are bound by the treaty, following its entry into force.

**Article XVII.** Article XVII allows for authentic texts of the treaty to appear in six languages. They are Arabic, Chinese, English, French, Russian, and Spanish.

**Annex 1.** The first annex to the treaty consists of a list of countries divided into six regional groupings. It is to be used in allocating seats on the Executive Council of the Comprehensive Nuclear Test-Ban Treaty Organization, which is established by Article II of the treaty. Seats on the Executive Council are allocated according to a quota for each region. The purpose is to assure geographical balance in the Council's membership.

**Annex 2.** The second annex to the treaty consists of a list of the 44 specific states that must deposit instruments of ratification to bring the treaty into force. The list includes, among others, the five declared nuclear powers (the U.S., China, France, Great Britain, and Russia), the three states that have nuclear weapons but are not recognized as nuclear powers (India, Israel, and Pakistan) and two states thought to be serious proliferation risks (Iran and North Korea). Together, the 44 states are all those that have significant nuclear facilities on their territories. If a single one of the 44 countries

(North Korea, for example) fails to ratify, then the treaty may not enter into force.

**The Protocol.** The protocol attached to the CTBT describes the international monitoring system and data center to detect nuclear test explosions worldwide and process the data collected by the system. This network of sensors and facilities includes 170 seismic stations, 80 radionuclide stations (with supporting laboratories), 11 hydroacoustic stations, 60 infrasound stations and an international data processing center. The protocol describes how these facilities will be managed, both individually and collectively, to fulfill the verification requirements of the treaty established by Article IV. Further, the protocol defines the specific terms for the conduct of the on-site inspections and confidence-building measures, also established by Article IV of the treaty. Finally, the protocol contains two annexes. Annex I provides the precise location of the facilities described in the protocol. Annex II describes the parameters that international data center technicians will use to read the data and determine whether "an event" recorded by the sensors is likely to be a nuclear test explosion. This list of parameters is not exhaustive and leaves room for individual judgments by international data center technicians.