

Jump-START

*Retaking
the Initiative
to Reduce
Post-Cold War
Nuclear
Dangers*



Committee on Nuclear Policy

FEBRUARY 1999

About The Committee

THE COMMITTEE ON NUCLEAR POLICY is a collaborative effort organized by project directors of several independent non-governmental organizations, in the United States and Europe, who research nuclear weapon policy issues. The directors formed the Committee in January 1997 to facilitate cooperation among their various research projects as a way to make their expertise and analyses available to policy analysts, policy-makers, and journalists in a timely and coordinated manner. The Committee was also formed to call greater attention to post-Cold War nuclear dangers and to the need for new policies to deal with nuclear dangers.

The Committee is composed of nuclear weapon experts, scholars, scientists, and researchers from many renowned academic institutions, policy institutes and centers. The Committee's members also include retired military leaders and national lawmakers who are dedicated to working on these important issues. Committee members join as individuals, and their affiliation in no way implies any formal association with the Committee on the part of their institutions.

During its first year, the Committee's activities involved joint promotion of members' project reports and studies. The Committee also commissioned and published a comprehensive survey on public attitudes towards nuclear weapons policy.

In March 1998, the Committee began to look primarily at the U.S.-Russian nuclear relationship, with particular emphasis on: 1) the process of phased reductions; 2) the alert status of U.S. and Russian forces; and, 3) doctrinal issues regarding possible use of nuclear weapons. The Committee began a series of focused meetings to produce a new set of initiatives encompassing all of these areas, aimed at retaking the initiative to reduce post-Cold War nuclear dangers. The Committee met with U.S. government officials, Russian experts, and elders of the U.S. arms control community. The accompanying proposal is the result of the Committee's deliberations.

While all members of the Committee support the general thrust of this report, it should not be construed that every member is in total agreement with all of the specific points presented in the pages that follow. One member, Alexei Arbatov, not only is the head of the Center for Political and Military Forecasts in Moscow, but is also a distinguished member of the State Duma, Russian Parliament. Because of his position as a national legislator, he asked, and the Committee agreed, to include his additional comments which can be found in Appendix V.

The Committee's work is coordinated by the Henry L. Stimson Center. Its executive director, Jesse James, is a Senior Associate at the Stimson Center.

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THE COMMITTEE ON NUCLEAR POLICY
IS COORDINATED BY

THE HENRY L. STIMSON CENTER

Pragmatic Steps Toward Ideal Objectives

COVER ART: Richard Fitzhugh

INTERIOR ART: conception and original sketch by Randy Mack Bishop, final illustration by Richard Fitzhugh

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Introduction

The Berlin Wall fell a decade ago. The Cold War ended almost nine years ago. The old nuclear standoff between the United States and the Soviet Union has been transformed. Nevertheless, the nuclear arsenals and attitudes of the United States and Russia still reflect Cold War postures. Worse still, terrifying new nuclear dangers have emerged as these postures are maintained in the face of Russia's ongoing economic collapse.

If the notion of either side launching a deliberate, massive nuclear attack against the other is wildly unrealistic, why have the nuclear doctrines of the United States and Russia not changed? Why are thousands of nuclear weapons on both sides still on hair-trigger alert even though they no longer target each other's territory? If Presidents Ronald Reagan and Mikhail Gorbachev could agree that a nuclear war could not be won, and must not be fought, why have the United States and Russia not moved faster in the post-Cold War period to reduce the risk of a nuclear exchange precipitated by a breakdown of authority or miscalculation?

One answer may be that the formal treaty negotiation process, used by the United States and the Soviet Union/Russia Federation to manage their Cold War nuclear rivalry, has not dealt effectively with new post-Cold War realities. The START II Treaty, signed in 1993, aims at force levels (3,000–3,500 deployed strategic warheads) that are no longer appropriate for today, let alone for the 21st century. Russian Defense Minister Igor Sergeev has stated publicly that Russia is likely to have no more than 500 deployed strategic warheads by 2012 for economic reasons. Yet, START II still has not gone into force because of opposition in the Russian Duma, where it has languished for the past six years. Moreover, formal negotiations for a follow-on START III pact (with further reductions to levels between 2,000 and 2,500) are likely to be time-consuming and, according to the Clinton administration, cannot begin until START II is formally approved by the Duma.

Treaties have served U.S. national interests well, but the pace of this process simply has not kept up with the expansion of nuclear dangers inside Russia. Senior

Russian officials have publicly acknowledged that 70 percent of Russia's early warning satellites are either past their designed operational life or in serious disrepair. Senior Russian military officials also have acknowledged that 58 percent of Russia's ballistic missiles are well past their operational life span. Vast amounts of bomb-making materials—plutonium and highly-enriched uranium—are poorly protected. These grave conditions invite catastrophic accidents or proliferation.

Neither the United States nor Russia has been willing, in recent years, to complement the slow and cumbersome process of treaty negotiations with actions that could be implemented far more rapidly. The time has now come to supplement treaties with parallel, reciprocal, and verifiable steps to reduce these dangers; dangers that directly threaten vital U.S. national interests.

Following a careful and painstaking examination over the past few months of the formal treaty negotiating process, the Committee on Nuclear Policy has concluded that the START process must be augmented with immediate, parallel, and reciprocal actions. The Committee strongly calls upon the Clinton administration to: reduce nuclear forces to levels far lower than currently envisioned under a START III treaty; take the majority of U.S. forces, alongside Russia, off hair-trigger alert; and, secure, monitor and greatly reduce fissile materials and warhead stockpiles. Concerted effort to achieve these goals could pave the way for formal negotiations at a later date and lock in these initiatives with treaties.

The Committee acknowledges the Reagan, Bush and Clinton administrations' efforts to advance the START process. Even before the end of the Cold War, Presidents Reagan and Gorbachev acted prudently to end the U.S.-Soviet strategic rivalry by declaring that a nuclear war must never be fought. They followed up that declaration with the elimination of an entire class of nuclear weapons in Europe by signing the 1987 Intermediate-Range Nuclear Forces (INF) Treaty.

Presidents Bush and Gorbachev continued to pull back from the strategic competition by concluding the

START I Treaty in 1991, obligating the United States and the Soviet Union to deploy no more than 6,000 strategic nuclear weapons. President Bush and Russian President Boris Yeltsin kept that momentum going, agreeing to further reduce deployed strategic forces by half in START II.

The Clinton administration has made great strides in implementing START I. The U.S. arsenal has now dropped below 7,000 accountable warheads. The administration persuaded Ukraine, Belarus, and Kazakhstan to allow ex-Soviet nuclear warheads to be removed from their territories, and to join the Nuclear Non-Proliferation Treaty (NPT) as non-nuclear weapons states. The administration worked hard to get START II ratified by the U.S. Senate, and successfully engaged President Boris Yeltsin at Helsinki by outlining a START III framework in 1997. The Clinton administration's efforts to secure the indefinite extension of the NPT and the completion of the Comprehensive Test Ban Treaty (CTBT) are equally laudable. All of these efforts have contributed to reducing nuclear dangers of the 21st century.

These notable achievements can be nullified, however, if Russia's continued decline leads to vastly increased nuclear dangers. The Committee believes strongly that more can and must be done to radically reduce the number of U.S. and Russian nuclear weapons, reliance on them, and the political value attached to them. While the Committee supports effective nuclear treaties, and the START process, it believes that new impetus is required to reduce nuclear dangers.

After meeting with Clinton administration officials, and with Russian civilian and military leaders, the Committee crafted, and now proposes, a set of initiatives to serve as the basis for supplementing the

formal treaty negotiating process—initiatives similar to those undertaken by Presidents Bush and Gorbachev in 1991. Keenly aware of the threat posed by a quickly disintegrating Soviet Union—one nuclear power dangerously on the verge of splitting into multiple nuclear powers—President Bush moved creatively and boldly. In September 1991, he announced that the United States would withdraw to its territory U.S. non-strategic, or tactical, nuclear weapons—artillery shells, short-range missiles, gravity bombs and nuclear weapons aboard U.S. surface naval vessels. He also ordered a thousand U.S. warheads deployed on strategic bombers and ballistic missiles that were slated for dismantlement under START I be taken off alert, even before the treaty was ratified. He further proposed new negotiations on strategic reductions.

President Gorbachev responded in kind, withdrawing all tactical weapons from Warsaw Pact nations and non-Russian republics, removing most categories of tactical nuclear weapons from service and designating thousands of nuclear warheads for dismantlement, while taking several classes of strategic systems off alert. The Soviet president also agreed to the negotiations that Mr. Bush proposed, which resulted in START II.

Mr. Bush's action successfully paved the way for larger nuclear reductions by taking the initiative to reduce an immediate nuclear threat. So, too, should the Clinton administration now take a similar leadership role in advancing creative and bold new steps to address newly pressing nuclear dangers within Russia. The Committee is convinced that such an approach provides the much-needed flexibility for adapting to the pace of the political, economic and military realities of the post-Cold War period.

Nuclear Dangers

Consider the following scenarios. Russian strategic rocket forces commanders, unable to reach their ailing president, come dangerously close to launching Russian missiles because an aging early warning radar erroneously indicates their country is under nuclear attack by the United States. A Russian nuclear weapons designer, who has not been paid for nearly a year, sells his services to Iran or Libya. A worker at a facility in one of Russia's once-closed "nuclear cities," now suffering severe economic conditions, delivers enough bomb-grade plutonium or uranium for one or two weapons to a terrorist organization or a rogue state.

These are no longer the scenarios of science fiction. They are real and present dangers that are no longer improbable. The following anecdotes demonstrate just how imminent these dangers are.

- January 1995, a scientific rocket launched by Norway was mistaken for a missile attack on Russia by the West due to a malfunction of Russia's aging early warning system. The Russian president's nuclear briefcase containing Russian forces' launch codes was activated for the first time before the Norwegian launch was deemed peaceful.
- September 1998, five soldiers from the 12th Main Directorate at Novaya Zemlya—Russia's only nuclear weapons test site—killed a guard at the facility, took another guard hostage and tried to hijack an aircraft. The soldiers seized more hostages before being disarmed by other Ministry of Defense forces and Federal Security Service commandos.
- September 1998, a 19-year-old sailor went on a rampage on an Akula-class nuclear-attack submarine, killing seven of his fellow sailors. He barricaded himself inside the torpedo bay for 20 hours, threatening to blow up the submarine with its nuclear reactor. He either committed suicide or was shot by Russian security forces. Russian officials insisted there were no nuclear weapons on board at the time, but unofficial accounts suggest otherwise.
- September 1998, a Ministry of Internal Affairs sergeant at the Mayak facility, where over 30 tons of separated weapons-usable plutonium is stored, shot two fellow soldiers and wounded another before escaping heavily armed. The incident led President Boris Yeltsin to order a review of nuclear security at the site.
- September 1998, a team of U.S. experts visiting Moscow was shown a building containing 100 kilograms of highly enriched uranium—enough for several nuclear bombs—that was completely unguarded because the facility where the fissile material was stored could not afford the \$200-a-month salary for a security guard.
- September 1998, some 47,000 unpaid nuclear workers joined in protests at various locations around Russia over what the workers' trade union said was over \$400 million in back wages owed to the nuclear sector.
- December 1998, the Chief of the Federal Security Service (FSB) in the Chelyabinsk region told the Itar-Tass that FSB agents had prevented the theft and illicit appropriation of 18.5 kilograms of nuclear materials suitable for use in nuclear weapons from one of the nuclear facilities in the Chelyabinsk region.
- Today, Ministry of Internal Affairs guards at several nuclear facilities have left their posts to forage for food. Others have been reluctant to patrol facility perimeters because they did not have winter uniforms to keep them warm on patrol.
- Today, at some nuclear facilities, entire security systems—alarms, surveillance cameras, portal monitors, etc.—have been shut down because electricity was cut off to the facilities for non-payment of bills.

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- Today, in hundreds of silos across Russia, sit over 20-year-old ICBMs, with service lives of only ten years, that are so unstable they pose risks of catastrophic proportion to life and the environment.

These examples represent only the tip of a nuclear iceberg. Clearly, time is of the essence. Waiting on the START process not only exacerbates these dangers for Russia but increases the risks of a nuclear accident, unauthorized launch, or nuclear materials falling into

hostile hands. Waiting for the Duma to ratify START II also weakens the NPT, which requires a good faith effort toward meeting nuclear disarmament obligations.

The Committee on Nuclear Policy calls on the Clinton administration to lead, and, to engage Russia in parallel, reciprocal, and verifiable measures to reduce post-Cold War nuclear dangers. The Committee calls on the administration to establish a new nuclear relationship with Russia for the post-Cold War era.

Recommendations

I. Deep Reductions

Russia can no longer afford to maintain the huge nuclear arsenal that it inherited from the former Soviet Union, and its civilian and military leadership have publically acknowledged that Russia will not be able to deploy the forces allowed under START II or START III. Because of serious concerns over safety and control of Russia's arsenal presented above, and because both Russia and the United States have arsenals well in excess of that needed to deter an attack, the United States should:

- Supplement formal arms control treaties with parallel, reciprocal, and verifiable reductions;
- Immediately declare U.S. intention to reduce, alongside Russia, to 1,000 deployed strategic nuclear weapons within a decade;
- Offer cradle-to-grave transparency on the status of all U.S. and Russian nuclear weapons as the basis for reciprocal reductions;
- With reciprocal verification, subsequently reduce to 1,000 total nuclear weapons on each side;
- Seek agreement from the other nuclear weapons states on a ceiling on their current deployment levels and begin multilateral talks on reductions once the United States and Russia reach 1,000 total nuclear weapons.

Rationale

The formal treaty process is stalled. There is no telling when START II will be ratified by the Russian Duma. The Clinton administration's posture of waiting for the Duma to act before proceeding to negotiate START III is untenable. Even if the Duma did act, it is highly unlikely that START III negotiations would result in a complete agreement before Presidents Clinton and Yeltsin leave office. That means more time lost.

Supplementing the formal treaty process with parallel, reciprocal, verifiable, and deep reductions serves U.S. national security interests. By proposing reductions down to 1,000 deployed strategic weapons, well below currently proposed START III levels, the United States opens the door for Russia to move more quickly in the direction that it has to go anyway. Willingness by the United States to cooperatively reduce strategic forces down to this level sends a signal that Washington seeks a new post-Cold War nuclear relationship with Moscow. Consequently, Russia may be more likely to agree to greater openness and transparency on its weapons, which the United States must insist on for deep reductions. The Committee advocates this positive-sum tradeoff: Russia secures rough parity at lower levels, while the United States secures transparency in Russia needed to make reductions irreversible.

Cradle-to-grave transparency, the tracking and accountability of every warhead from its production to its dismantlement and destruction, must be the linchpin of a deep reduction regime so as to make it maximally verifiable and irreversible. Russia has been less than enthusiastic about greater openness for its nuclear holdings. This must change, and is more likely with the offer of parallel deep reductions.

Agreement between the United States and Russia to reduce to 1,000 deployed strategic weapons would also include an agreement to second stage reductions down to 1,000 total weapons, which would include the tactical nuclear weapons that concern the United States and our European allies. In return for addressing Russian concerns of asymmetry at the strategic level, Moscow must shed light on its inventory of tactical nuclear weapons, which are aging and reaching obsolescence, in any event. Reductions to 1,000 total weapons on each side coincides with the proposed limit called for in the 1997 report by the National Academy of Sciences, *The Future of Nuclear Weapons*.

Moreover, bilateral reductions to this level would then pave the way for five power nuclear negotiations to deal with residual nuclear forces. This reduction regime could also reap major non-proliferation benefits.

It moves the P-5 states significantly toward meeting their nuclear disarmament obligations under the Nuclear Non-proliferation Treaty.

II. Removing the Hair-Trigger

That a large, powerful and unstable Russian nuclear arsenal is also on hair-trigger alert, capable of being launched within a few minutes of an attack warning, greatly heightens the risk of an accidental or unauthorized launch. U.S. forces are equally poised for quick launch. Neither the United States nor Russia can be secure with so many nuclear weapons on hair-trigger alert. No other single measure would more clearly signal the end of the mutual suspicion carried over from the Cold War than taking these weapons off quick launch status. The Committee calls on the United States to:

- Immediately stand down, alongside Russia, nuclear forces slated for destruction under START II;
- Declare its intention, with a parallel, reciprocal commitment from Russia, to eliminate the launch-on-warning option from nuclear war plans;
- Begin discussions among the five nuclear weapon states on verifiably removing all nuclear forces from hair-trigger alert;
- Declare its intention, with a parallel, reciprocal commitment from Russia, to verifiably eliminate massive attack options from nuclear war plans.

Rationale

Despite the 1994 Clinton-Yeltsin pact not to aim nuclear missiles at each other, U.S. and Russian forces still are loaded with their wartime targets that can be reactivated within seconds for Intercontinental Ballistic Missiles (ICBMs) and minutes for Submarine-Launched Ballistic Missiles (SLBMs). Therefore, if a launch order were sent under current circumstances, 4,000 ICBM warheads (2,000 on each side) could be

on their way to their targets within a few minutes and another 1,000 SLBM warheads could be en route to targets shortly thereafter.

Presidents Clinton and Yeltsin also agreed in 1997 at their Helsinki summit to “de-activate” missiles slated for destruction under START II by 2004. The dangers posed by having so many weapons on hair-trigger alert demand that these missiles be stood down immediately. An immediate stand down would reduce the number of weapons on hair-trigger alert from 2,500 (on each side) currently to 500—the number Russia would retain on quick-launch under the START II provisions.

The stand down could be monitored by national technical means, as well as by existing extensive rights for random, short-notice missile inspections under START I. Above all, the stand down would benefit U.S. national security interests and the safety of its citizens. This action would also achieve a major psychological benefit by breaking with the Cold War psyche. So, too, would the declaration to eliminate the launch-on-warning option. The declaration could be implemented by procedural changes similar to those that now preclude the launch of U.S. missiles directed at China. Like the existing de-targeting declaration, these procedural changes could not be readily verifiable. Confidence in and verifiability of the declaration could be achieved gradually as transparency arrangements and other de-alerting measures, such as removing warheads from missiles, are implemented.

The alert levels of French and British nuclear forces are low. China does not appear to have strategic nuclear forces on alert. Including the forces of these nuclear weapons states in talks to verifiably remove all nuclear forces from hair-trigger alert is pivotal to Russia’s acceptance of such a move.

The elimination of massive attack options goes to the heart of transforming Cold War postures. Taking this step would be the first material acknowledgment that a deliberate, premeditated, mutually suicidal bombardment is both implausible and unthinkable. The Committee believes that launch-on-warning postures and massive nuclear targeting options are no longer suitable in contemporary circumstances.

III. Fissile Material and Warhead Controls

Central to U.S. security is ensuring that nuclear weapons and the essential ingredients to make them do not fall into hostile hands. With the escalating economic crisis in Russia, immediate action is needed to consolidate, secure, and account for all stockpiles of nuclear warheads and weapons-usable nuclear materials. A comprehensive accounting and monitoring regime for warheads and fissile materials is critical to the verification of the deep reductions the Committee proposes, and, to making them irreversible. This regime would also provide an urgently-needed defense against the proliferation of nuclear weapons and fissile materials to other states or sub-national groups. The Committee calls on the United States to:

- Help install modern security and accounting systems and provide resources and incentives for sustaining effective security at all Russian nuclear facilities;
- Help consolidate Russia's weapons-usable materials into the smallest possible number of locations;
- Help shrink the Russian nuclear weapons complex;
- Promote alternative employment in Russia's nuclear cities;
- Build a cradle-to-grave transparency and monitoring system for all warheads and fissile materials;
- Negotiate reductions in fissile material stocks in excess of that needed to support a 1,000-warhead stockpile;
- Triple current funding for fissile materials controls.

Rationale

With nuclear guards walking off their posts to forage for food and thousands of workers with access to fissile materials striking to protest months of unpaid wages, improving the security at Russia's nuclear facilities is warranted on an emergency basis. The expanded scope of assistance that the Committee

proposes is essential not only to control missiles and launchers as in the past, but also to expand controls over nuclear warheads and fissile materials.

Fissile materials are stored at over 100 buildings located in over 50 different sites throughout Russia and the former Soviet Union. It is essential to consolidate this material at as few sites as possible. It is equally essential that all remaining facilities are equipped with modern security and accounting systems, and are provided with the resources and incentives necessary to sustain security well into the future, including a new focus on the "human factor" to help instill a new safeguards culture.

The sheer size of Russia's vast nuclear weapons complex poses a monumental challenge in controlling and safeguarding fissile materials and warheads. In Russia's ten "nuclear cities," tens of thousands of nuclear scientists, engineers and technicians, are in dire economic straits. An investment of roughly \$500 million over the next five years by the United States—with Russian contributions as well—could be used to downsize this giant complex and provide alternative employment to its workers who might be tempted not only to steal fissile materials, but also sell their services to others.

Cradle-to-grave transparency needed to achieve deep reductions requires a credible, detailed exchange of data on stockpiles of warheads and fissile materials. Reciprocal monitoring of sites where warheads are stored pending dismantlement would be required as well. Relaxing nuclear secrecy would require a major change in psychology, particularly on the Russian side. Russian transparency will be difficult to secure unless the United States is willing to make the kinds of reductions in its arsenal that Russia is now forced to make because of its economic crisis, and to permit equivalent transparency.

Both to ensure that excess warheads are dismantled as rapidly and as safely as practicable, and to increase the incentive for Russia to accept cradle-to-grave transparency, the United States should provide financial assistance to defray Russian dismantlement costs, including costs to increase its dismantlement capacity if necessary.

To avoid having to secure vast stockpiles of excess fissile materials indefinitely, and to make deep reductions irreversible, the Committee calls on the United

States and Russia to agree on a level of plutonium and highly enriched uranium stocks sufficient only to maintain the maximum 1,000 total warhead-stockpile. While en route to this fissile material stockpile, the United States and Russia should move as quickly as possible to establish arrangements to transform current excess fissile material stocks into forms that would make it far more difficult to ever convert them for use in weapons again. As a first step, the United States could offer to purchase additional amounts of Russia's HEU from weapons that has been blended down to non-weapons usable form, with the proceeds going back into consolidating and improving security at fissile material storage sites. The United States could also offer Russia financial incentives to blend down all its excess HEU to less than 20 percent as quickly as possible, thereby reducing risks of proliferation.

The United States could encourage the conversion of excess plutonium to forms that are no more weapons-usable than the plutonium in commercial spent fuel, using the method preferred by each side that could be implemented quickly and with stringent safeguards and security throughout the process.

As the United States and Russia reduce their stockpiles of fissile materials, it is vitally important to ensure that no new materials are being produced. The Committee calls on the United States and Russia to establish transparency at each other's enrichment plants to ensure that no additional HEU is being produced. The two countries should also complete the conversion of Russia's plutonium production reactors so that they no longer produce weapons-grade plutonium. These measures would provide valuable experience and impetus for concluding an international fissile material cutoff treaty.

The expanded scope and level of effort proposed by the Committee would require a tripling of the funds currently spent on fissile materials controls in Russia. The cost to address this threat is small compared to the cost and risk of failure to control fissile materials in the former Soviet Union.

Finally, effective management of a new US-Russian nuclear relationship also involves addressing differences over the issue of ballistic missile defenses (BMD). Members of the Committee have strongly held views on the utility of BMD. Many members seriously question the efficacy of a national missile defense (NMD) and seek to maintain the Anti-ballistic Missile (ABM) Treaty as the cornerstone of U.S.-Russia strategic stability. Others are inclined to support a limited NMD, if combined with deep cuts in offensive weapons. Realizing that another significant debate over defenses and the ABM Treaty is in the offing, the Committee agreed on a set of criteria by which to evaluate objectively any NMD proposals and against which a deployment decision should be weighed. The Committee believes that national missile defense deployment proposals should:

- Have a clearly defined, achievable mission;
- Prove missile defense technologies under repeated, rigorous testing;
- Be affordable;
- Be cost effective at the margin;
- Be pursued in a balanced fashion along with other measures to reduce nuclear threats;
- Have an overall impact that should reduce nuclear dangers, taking into account their potential impacts on nuclear arms reductions and non-proliferation.

Conclusion

The Committee does not believe that the START process of formal treaty negotiations is irrelevant, or that it should be jettisoned. The Committee believes, however, that the START process should be supplemented with new initiatives to directly address the new nuclear realities and risks of the post-Cold War period. The Committee calls on the Clinton administration to break the current six-year logjam on START II ratification; radically reform the management of the U.S.-Russian nuclear relationship; and, to take the lead in reducing both reliance on nuclear weapons and the political value attached to them.

To continue to rely solely on the stalemated START process is to needlessly increase the costs and risks of maintaining U.S. and Russian nuclear arsenals at levels well in excess of what is needed to deter an attack.

The Committee's initiatives for deep reductions, removing nuclear forces from hair-trigger alert, safeguarding fissile materials and warhead controls, not only would reduce these costs and risks, but could also set the stage for a larger, more cooperative multilateral security framework for the 21st century.

Prior to the disintegration of the Soviet Union, President Bush responded quickly and successfully to an immediate nuclear danger. Immediately following the disintegration of the Soviet Union, Senators Sam Nunn and Richard Lugar acted quickly to harness U.S. funds and expertise to consolidate scattered Soviet warheads under Russian control and to destroy the delivery vehicles for those warheads. Even more far-reaching measures, to be implemented just as quickly, are now needed by the United States to respond to even greater post-Cold War nuclear dangers.

Appendix I

Committee on Nuclear Policy Question and Answer

Deep Cuts

Q. Why not stand pat while Russian nuclear forces go down?

A. For one thing, it's expensive. Maintaining U.S. nuclear forces at START I levels, as now required by Congress, instead of making parallel reductions with Russia, can cost an extra \$1 billion annually that the Pentagon does not want to spend. No good national security purpose is served by deploying several thousand additional nuclear warheads that are not needed. More importantly, standing pat invites backsliding and worse: nuclear dangers not diminished by passivity.

Q. Why do you propose parallel, reciprocal, verifiable reductions down to 1,000 deployed warheads on strategic forces instead of securing these reductions by mean of treaties?

A. Because the process of negotiating and ratifying treaties has fallen far behind the increased pace of nuclear dangers within Russia. The United States is now waiting for the most reactionary elements of the Russian Duma to proceed on an agenda that serves U.S. national security interests. That makes little sense.

Q. Aren't treaties verifiable? How do you verify parallel and reciprocal reductions?

A. The United States and Russia would use the agreed verification arrangements under START I—a treaty ratified by both countries—and simply apply these procedures to deeper cuts.

Q. Isn't the Committee's proposal undercutting the administration's efforts to encourage START II ratification by the Duma?

A. START II was signed in January 1993. Ever since, the Clinton administration has been applying leverage on the Duma without success to ratify START II by withholding negotiations for deeper cuts. The

Committee, like the administration, would like the Duma to ratify START II. Unlike the administration, the Committee is no longer willing to wait for the Duma to act in order to secure much deeper cuts. Even if START II and III were quickly ratified, as presently configured, both treaties would still not catch up to the reality of deteriorating conditions within Russia.

Q. What does the United States receive in return for following Russia down to 1,000 deployed warheads on strategic forces?

A. Two very important benefits—deeper cuts in dangerous Russia nuclear forces, and cradle-to-grave transparency for the Russian inventory of nuclear weapons and fissile material.

Q. What if the United States doesn't get the transparency it wants from Moscow? Should the United States still go down alongside Russia?

A. The United States could reduce its forces prudently, as national security and budgetary priorities suggest. But the United States may not reduce to the much lower levels projected for Russia. It is, therefore, in Russia's interest to provide the transparency the United States needs for deep, mutual cuts.

Q. Isn't the Committee cutting the Congress out of the loop by pursuing parallel, reciprocal, verifiable steps?

A. Not at all. Congressional consent in annual authorization and appropriation bills would provide oversight and consent to this process. Clearly, the steps the Committee proposes would require close executive/congressional consultation.

Q. Why jettison treaties? They have served U.S. security interests well in the past.

A. The Committee does not propose jettisoning treaties. The Committee hopes that treaties will eventually

catch up to and reaffirm the process of reciprocal and verifiable reductions.

Q. Presidents Clinton and Yeltsin have agreed to reduce deployed strategic nuclear forces under START III to between 2,000–2,500 warheads. Why does the Committee propose 1,000 warheads?

A. Because 2,000–2,500 warheads—with triple that number in reserve—are unnecessary for any realistic purpose, and dangerous under current circumstances in Russia.

Q. How long would it take to reduce to 1,000 deployed strategic warheads?

A. Warhead dismantlement is proceeding in Russia and the United States at a rate of between 1,500–2,000 per year. The reductions the Committee proposes could take three to four years.

Q. After this step, the Committee proposes even deeper bilateral cuts. Is it possible and prudent to reduce all U.S. and Russian nuclear weapons—strategic and tactical, deployed and non-deployed—down to 1,000 per side?

A. This step, which would follow reductions to 1,000 deployed strategic nuclear warheads, would require the cradle-to-grave transparency the United States seeks.

Q. How long would this step take?

A. This step could be accomplished within a decade.

Q. What about the other nuclear weapon states?

A. While the process of bilateral nuclear arms reductions is underway, the other nuclear weapon states need to exercise restraint. While their replacement programs would not be precluded—as with the United States and Russia—the Committee proposes that the United States call on the other nuclear weapon states to pledge not to increase their number of deployed nuclear weapons.

Q. Is the Committee proposing unilateral disarmament?

A. No, the Committee is proposing reciprocal, parallel, and verifiable steps to reduce nuclear dangers—steps that would supplement formal treaties with Russia.

Q. How low would the Committee propose going on deep cuts? Is the Committee advocating complete nuclear disarmament?

A. Every U.S. president since Harry Truman has supported the ultimate goal of nuclear disarmament, but that goal is a long, long way off. The United States, along with other nuclear powers, needs to move step by step, as national security and political conditions allow. Right now, nuclear dangers are proceeding faster than current reduction measures.

Removing Nuclear Weapons from Hair-Trigger Alert

Q. How many nuclear warheads are now on hair-trigger alert?

A. Approximately 4,500. Russia retains around 2,000 land-based missile warheads on hair-trigger alert because its submarine and bomber forces are almost entirely unready for duty. The United States retains approximately 2,000 warheads on alert on land-based missiles, and another 600 on sea-based missiles. U.S. bombers have been completely off alert since the order was given by President Bush.

Q. How many nuclear warheads would be on hair-trigger alert under the Committee's proposal?

A. A stand-down of forces slated to be reduced under START II would leave approximately 1,500 weapons on alert: 1,000 on U.S. missiles, 500 on Russian missiles. If the United States matched the Russian stand-down, a total of 1,000 weapons (500 on each side) would remain on alert. While this would be a major advance, the resulting Russian forces that would remain on hair-trigger alert are still troubling, which is why the Committee also calls for the mutual U.S. and Russian elimination of launch-on-warning and massive nuclear attack options.

Q. Why does the Committee propose a stand-down to START II and not START III levels?

A. Because START II numbers reside in a negotiated treaty, unlike START III, and because for purposes of de-alerting, there would be no difference between the two treaties: START III would off-load warheads from the same number of launchers as permitted in START II.

Q. Why are so many warheads now on hair-trigger alert?

A. Because U.S. strategic forces have been directed by the President to remain prepared for a sudden, massive, deliberate Russian attack and, apparently, to be prepared to retaliate immediately on a massive scale. The rationale for Russia's hair-trigger posture is similar, but with the additional justifications that it relies on nuclear weapons more heavily than ever to compensate for other military weaknesses, and because U.S. nuclear forces remain at such a high state of readiness. Elimination of massive attack options and launch-on-warning postures would facilitate de-alerting, as well as very deep cuts in nuclear weapon deployments.

Q. If the United States “stood down” nuclear warheads on hair-trigger alert to START II levels, would Russia do likewise?

A. There are no guarantees that Russia would follow the U.S. lead, but Russian alert levels will degrade over the next decade with their aging nuclear forces. As a matter of nuclear safety, it is very much in the U.S. and Russian interest to reduce alert rates sooner rather than later. It's also a dead-cinch certainty that if U.S. nuclear forces remain on high levels of alert, Moscow will do what it can to launch quickly, despite the weaknesses in Russian early warning and command and control.

Q. What does “launch-on-warning” mean?

A. This term refers to the operational plan to launch one's own missile forces after an enemy missile launch occurs, but before the arrival of the enemy missiles, with the hope of averting the wholesale destruction of one's own missile forces in their silos or other launch positions. This option has been important in U.S. and Russian nuclear strategy for many decades.

Q. What would be required to take nuclear weapons off launch-on-warning posture?

A. Procedural changes would eliminate this option as a practical matter. To illustrate, the United States does not possess an option to launch-on-warning against China. Current practices preclude such an option. Changes in procedures would mainly involve emergency decision-making, the grouping of targets in the strategic war plan, and other emergency war operations (EWO).

Q. How can the elimination of launch-on-warning posture be verified?

A. Initial procedural changes would not be verifiable with high confidence, although it should be emphasized that launch-on-warning is not essential to project a sufficient retaliatory threat and, therefore, verification of its elimination is not vital to deterrence. Its elimination would become transparent, in any case, as Russia and the United States implemented verifiable de-alerting measures, such as the removal of warheads from missiles. Comprehensive de-alerting would practically remove the capacity for rapid launch; effective monitoring of de-alerting would establish the diminished capacity for launch-on-warning.

Q. Why should the United States eliminate a launch-on-warning posture even if Russia does not follow suit?

A. As noted earlier, the United States will retain an invulnerable nuclear deterrent on submarines at sea that can respond in a devastating fashion. Moreover, while there is no guarantee that Russia will follow the U.S. lead, there is every reason to believe that Russia will keep many dangerous nuclear weapons on hair-trigger alert if the United States fails to lead.

Q. What are “massive attack” options?

A. Options that involve the firing of many thousands of nuclear weapons certainly fall into this category. Currently, the options in the U.S. strategic war plan that are designated as “major attack options” involve this scale of employment. In the Committee's view, many of the options in the U.S. plan designated “limited attack options” also involve large-scale, or massive employment (as many as about 100 weapons) of nuclear weapons.

Q. What would be required to remove massive attack options from nuclear war plans?

A. The same kinds of procedural changes that would eliminate launch-on-warning as an option could also ensure the elimination of massive attack options. Of course, very deep reductions in the arsenals could also produce this effect.

Q. How can the removal of massive attack options from nuclear war plans be verified?

A. The procedural changes could not be verified with high confidence. Verification of very deep cuts would be necessary to establish the elimination of massive attack options.

Q. Why should the removal of massive attack options be mutual and not unilateral?

A. If one side cheated and launched a massive strike, the victim would be unable to retaliate in any cohesive manner if it had relinquished its options for large-scale retaliation. A conservative assessment might conclude that such asymmetry would undermine stable deterrence.

“Loose Nukes” and Fissile Material Controls

Q. Why should the United States pay for reducing nuclear dangers in Russia—safeguarding fissile material, storing warheads, and dismantling missiles, submarines and bombers?

A. Because it is in the U.S. national security interest to safeguard dangerous nuclear materials and dismantle weapon launchers. And, because Russia would give these tasks a much lower priority than the United States. If the United States does not help, these problems will grow much worse.

Q. How much is the United States now paying to help reduce nuclear dangers in Russia?

A. Under the so-called Nunn-Lugar program, the United States has previously spent approximately \$425 million annually. The United States is also allocating approximately \$200 million more to its own nuclear laboratories to assist scientists and technicians at Russian laboratories safeguard nuclear materials.

Q. Is this enough, too much or not enough?

A. Given the threat and consequences of diversion, the United States is spending far too little to address these dangers. Congress adds billions of dollars every year to the Pentagon budget for projects the Pentagon doesn't want. For example, Congress gives the Air Force a gift equivalent in size to the Nunn-Lugar program every year for C-130 transports for the Air National Guard. The United States spends ten times this amount for missile defenses every year. Even a tripling of funding for these programs, which the Committee proposes, would still result in an imbalanced effort to reduce nuclear dangers within the former Soviet Union.

Q. If the primary problem is economic distress in Russia, why not propose another Marshall Plan?

A. Because unlike the leaders of post-World War II Europe, Russian leaders are unwilling to make the structural changes and sacrifices to transform their economies with U.S. assistance. While a new Marshall Plan would not work, a more focused effort directed at reducing and eliminating nuclear dangers can work, because it is in Russia's national security interest, as well as in the U.S. national interest.

Missile Defenses

Q. Does the Committee support or oppose missile defenses?

A. Many of the Committee members are very skeptical about the utility of missile defenses; others are inclined to support defenses. All Committee members agree that missile defenses should meet common sense criteria.

Q. What are the Committee's criteria?

A. 1) Missile defenses should have a clearly defined and achievable mission; 2) The effectiveness of missile defense technology should be proven under rigorous and repeated testing; 3) Defenses should be cost-effective at the margin; 4) Defenses should be affordable; 5) Defenses should be pursued in a balanced fashion along with other initiatives to reduce nuclear dangers; 6) The net effect of defensive deployments should be to reduce nuclear dangers.

Q. Given the dangers the Committee is concerned about, why not support defenses unconditionally?

A. No program deserves a blank check. Defenses need to be of proven effectiveness.

Appendix II

Committee on Nuclear Policy Joint Statement

The United States and world security are threatened by the continued existence of nuclear weapons and by the efforts of states to rely on nuclear weapons to meet their security objectives.

Therefore, our ultimate objective must be the elimination of all nuclear weapons by all nations through a verifiable and enforceable international agreement. Keeping in mind this goal and recognizing this will be a long and arduous process, the United States should now:

- Restate forcefully its commitment to the ultimate goal of eliminating nuclear weapons by verifiable international agreements.
- State clearly that the United States will no longer plan for the use of nuclear weapons to deter or respond to non-nuclear attacks and that it maintains nuclear weapons only for the purpose of deterring their use as long as they are held by other states.
- Reduce the danger of nuclear war and the perception that we continue to rely on nuclear weapons by exploring with other nuclear states a series of

measures that will immediately remove land and sea-based ballistic missiles from hair-trigger alert, and then progressively extend the time that would be required to return them to rapid response postures.

- Negotiate and implement deeper reductions in nuclear weapons with Russia and make clear its willingness to do so immediately.
- Begin discussions with all nuclear-weapons states on measures, such as comprehensive accounting for nuclear weapons and materials, that would facilitate agreements to reduce nuclear weapons stockpiles and the enforceable verification of an agreement to eliminate all nuclear weapons in all nations.

We believe these steps merit the support of all those concerned with the dangers of nuclear weapons, including those who may not at this time favor the elimination of all nuclear weapons.

Appendix III

Committee on Nuclear Policy Members

Jesse James, Executive Director, *Henry L. Stimson Center*

Alexei Arbatov, *Center for Political and Military Forecasts*

Bruce Blair, *The Brookings Institution*

Matt Bunn, *Harvard University*

Adm. Eugene Carroll (USN-Ret.), *Center for Defense Information*

Joseph Cirincione, *Carnegie Endowment for International Peace*

Sen. Alan Cranston, *State of the World Forum*

Amb. Jonathan Dean, *Union of Concerned Scientists*

Harold Feiveson, *Princeton University*

Trevor Findlay, *Verification Research, Training and Information Centre*

Cathleen Fisher, *The Henry L. Stimson Center*

Gen. Andrew J. Goodpaster (USA-Ret.)

Amb. Thomas Graham, Jr., *Lawyers Alliance for World Security*

Peter Hayes, *Nautilus Institute*

Wade Huntley, *Nautilus Institute*

John Isaacs, *Council for a Livable World*

Rebecca Johnson, *The Acronym Institute*

Daryl Kimball, *Coalition to Reduce Nuclear Dangers*

Andrew Krepinevich, *Center for Strategic and Budgetary Assessments*

Michael Krepon, *The Henry L. Stimson Center*

Kenneth Luongo, *Russian-American Nuclear Security Advisory Council*

Robert Manning, *Council on Foreign Relations*

Will Marshall, *Progressive Policy Institute*

Robert S. McNamara

Alistair Millar, *Fourth Freedom Forum*

Harald Müller, *Peace Research Institute, Frankfurt*

Janne Nolan, *The Century Fund*

Christopher E. Paine, *Natural Resources Defense Council*

Alexander Pikayev, *Carnegie Endowment Moscow Center*

Daniel Plesch, *British American Security Information Council*

Ben Sanders, *Programme for Promoting Nuclear Non-Proliferation*

Annette Schaper, *Peace Research Institute Frankfurt*

Lawrence Scheinman, *The Monterey Institute*

Stephen Schwartz, *Educational Foundation for Nuclear Science*

Leon Sigal, *Social Science Research Center*

John Simpson, *Programme for Promoting Nuclear Non-Proliferation*

Clifford Singer, *University of Illinois*

John Steinbruner, *Brookings Institution*

Adm. Stansfield Turner, (USN-Ret.)

Frank von Hippel, *Princeton University*

Appendix IV

Committee on Nuclear Policy Member Biographies

ALEXEI G. ARBATOV is the head of the Center for Political and Military Forecasts for the Institute of World Economy and International Relations of IMEMO in Russia. He also has been a member of the State Duma, Russian Parliament since 1994. He was elected by the federal list of Russia's main democratic party, "YABLOKO." He is on the Defense Committee and is responsible for the elaboration of the defense budget and processing of arm control treaties.

BRUCE G. BLAIR is a Senior Fellow in the Foreign Policy Studies Program at the Brookings Institution. He is an expert on the security policies of the United States and the former Soviet Union, defense conversion, and nuclear forces command and control systems. Blair has frequently testified before Congress on this latter subject. He has also extensively studied the Russian military and military-industrial economy.

While at Brookings, he has taught defense analysis as a visiting professor at Yale and Princeton universities. Before joining Brookings in 1987, Blair served in the Department of Defense and was a project director at the Congressional Office of Technology Assessment.

Blair is a former U.S. Air Force officer assigned to the Strategic Air Command where he served as a Minuteman ICBM launch control officer, and as a support officer for SAC's Airborne Command Post. He is the author of numerous books, occasional papers, and articles on defense issues.

MATTHEW BUNN is Assistant Director of the Science, Technology and Public Policy Program at Harvard University's John F. Kennedy School of Government. His current research interests include security for weapons-usable nuclear material in the former Soviet Union and worldwide; nuclear theft and terrorism; verification of nuclear stockpiles and of nuclear warhead dismantlement; disposition of excess plutonium; conversion in Russia's nuclear cities; and nuclear waste storage, disposal, and reprocessing.

From 1994–1996, Bunn served as an adviser to the White House Office of Science and Technology Policy, where he took part in a wide range of U.S.-Russian negotiations relating to security, monitoring, and disposition of weapons-usable nuclear materials. He was the staff director for the classified study of security for nuclear materials conducted by the President's Committee of Advisers on Science and Technology in 1995, which led to Presidential Decision Directive 41, and for the recent report to Presidents Clinton and Yeltsin of the U.S.-Russian Independent Scientific Commission on Disposition of Excess Weapons Plutonium.

Previously, Bunn directed the study *Management and Disposition of Excess Weapons Plutonium*, by the U.S. National Academy of Sciences' Committee on International Security and Arms Control.

ADM. EUGENE CARROLL (USN-RET.) is the Deputy Director of the Center for Defense Information in Washington, D.C. He is actively engaged in research and analysis concerning major defense issues.

Promoted to the rank of Rear Admiral in 1972, Carroll served as Commander of Task Force 60, the carrier striking force of the U.S. Sixth Fleet in the Mediterranean. From 1977–1979, he served on General Alexander Haig's staff in Europe. He was the first naval officer to serve as Director of U.S. military operations for all U.S. forces in Europe and the Middle East. His last assignment on active duty was Assistant Deputy of Chief of Naval Operations for Plan, Policy and Operations at the Pentagon, in which he was engaged in U.S. naval planning for conventional and nuclear war.

JOSEPH CIRINCIONE is a Senior Associate and Director of the Non-Proliferation Project at the Carnegie Endowment for International Peace in Washington, D.C. Prior to joining the Endowment, he was a senior associate at the Henry L. Stimson Center, where he directed the Nuclear Roundtable, and was also Executive Director of the Committee on Nuclear Policy. In 1996, he served in 1996 as the Chair of the Coalition to Reduce Nuclear Dangers. During 1994 and 1995, He served as the Executive Director for the Campaign for the Non-Proliferation Treaty coalition.

Cirincione previously served as a national security specialist on the professional staff of the House Armed Services Committee and as Deputy Staff Director of the Government Operations Subcommittee on Legislation and National Security. He was also Associate Director of the Central America Project at the Carnegie Endowment for International Peace, special assistant to the associate director of the U.S. Information Agency and an analyst at the Center for Strategic and International Studies.

SEN. ALAN CRANSTON is the Chair of the State of the World Forum and Chair of the Gorbachev Foundation. He also served as U.S. Senator from California from 1969 to 1993, during which he was Democratic Whip and Member of the Foreign Relations, Intelligence and Banking and Housing and Urban Affairs Committees.

JONATHAN DEAN is adviser on international security issues for the Union of Concerned Scientists. In 35 years

in the Foreign Service, he worked on East-West relations, arms control and peacekeeping. He is the author of three books on European Security

HAROLD FEIVESON, a theoretical physicist, is a Senior Research Scientist in the Center for Energy and Environmental Studies and a member Center of International Studies at Princeton University. His principal research interests are in the fields of nuclear weapons and nuclear energy policy. He is a co-principal investigator, with Prof. Frank von Hippel, of Princeton's research Program on Nuclear Policy Alternatives. He has taught courses and workshops relating to nuclear weapons, energy, and national and global environmental issues. He has been actively involved with collaborative projects with Russian scientists. He is the Editor and one of the founders of the international journal, *Science & Global Security*.

He was a member of the Science Bureau of the U.S. Arms Control and Disarmament Agency from 1963 to 1967. He has served as a consultant to the U.S. Nuclear Regulatory Commission and Arms Control and Disarmament Agency, and recently served as member of a National Academy of Sciences/ National Research Council Committee on the U.S. fusion program.

TREVOR FINDLAY is the Executive Director of the Verification Research, Training and Information Centre (VERTIC) in London. He is a former Project Leader on Peacekeeping and Regional Security at the Stockholm International Peace Research Institute (SIPRI) in Sweden. He served thirteen years as a diplomat in the Australian Foreign Service, during which he served on the Australian delegation to the Conference on Disarmament, as well as Australian delegations to the First Committee of the UN General Assembly, the UN Disarmament Commission and the Third Special Session on Disarmament.

CATHLEEN FISHER is a Senior Associate at the Henry L. Stimson Center in Washington, D.C. where she is co-director of the Center's project on "Reducing Nuclear Dangers, Building Cooperative Security." From 1994 to 1998, she directed the Stimson Center's project on "Eliminating Weapons of Mass Destruction."

Fisher has taught in Political Science Department at Emory University, and has been a fellow at the Peace Research Institute in Frankfurt, the Center for International Affairs at Harvard University, and the Free University of Berlin. Prior to joining the Stimson Center, she wrote on European and German foreign and security policy for Defense Forecasts, Inc. in Washington, D.C.

GEN. ANDREW GOODPASTER, (U.S. Army, Ret) is the Chairman of the George C. Marshall Foundation and Senior Fellow at the Eisenhower World Affairs Institute.

Gen. Goodpaster served as Staff Secretary and Defense Liaison Officer to President Eisenhower from 1954 to 1961 and assisted President Nixon in organizing the Nixon administration's conduct of foreign policy and international

security affairs. Before retiring from the U.S. Army in 1974, he served as Commander-in-Chief, U.S. European Command and Supreme Allied Commander, Europe; Assistant to the Chairman, Joint Chiefs of Staff; Director of the Joint Staff; Commandant of the National War College; and Deputy Commander of U.S. forces in Vietnam. He was a Senior Fellow at the Woodrow Wilson International Center for Scholars in the Smithsonian Institution, and assistant to Vice-President Rockefeller on the Commission of the Organization of the Government for the conduct of Foreign Policy. Recalled to active duty in 1977, he served as the 51st Superintendent of the U.S. Military Academy until 1981.

AMB. THOMAS GRAHAM, JR., is the President of the Lawyers Alliance for World Security (LAWS). He served as the Special Representative of the President for Arms Control, Non-Proliferation, and Disarmament from 1994-1997. He led U.S. Government efforts to achieve a permanent Nuclear Non-Proliferation Treaty (NPT) leading up to and during the 1995 Review and Extension Conference of the NPT. He headed the U.S. Delegation to the 1996 Review Conference of the Conventional Armed Forces in Europe (CFE) Treaty. He also headed the U.S. Delegation to the 1993 ABM Treaty Review Conference.

Amb. Graham served as the Legal Advisor to the U.S. START I (1991) and START II (1992-93) Delegations and as General Counsel of the United States Arms Control and Disarmament Agency from 1977-1981 and from 1983 to 1993. Among other assignments, he has served as Legal Advisor to the U.S. SALT II Delegation (1974-79); the Senior Arms Control Agency Representative to the U.S. Intermediate-Range Nuclear Forces Delegation (1981-1982); Legal Advisor to the U.S. Nuclear and Space Arms Delegation (1985-88); Legal Advisor to the U.S. Delegation to the Non-Proliferation Treaty Review Conference in 1980; and Legal Advisor to the U.S. Delegation to the 1988 ABM Treaty Review Conference.

PETER HAYES is a Senior Researcher at the Nautilus Institute for Security and Sustainable Development in Berkeley, California. He is active as an environment and energy consultant in developing countries, working for United Nations Environment Programme, Asian Development Bank, World Bank, Canadian International Development Research Council, US Agency for International Development, and the United Nations Development Programme. From 1974 to 1976, he served as first executive director of the Environment Liaison Center in Nairobi, Kenya

WADE HUNTLEY is Program Director for Asia-Pacific Security at the Nautilus Institute for Security and Sustainable Development. His areas of expertise include international security, nuclear non-proliferation and arms control, political relations in the Asia-Pacific region, and political theory.

Prior to joining the Nautilus Institute in 1996, he was visiting professor at the University of Hawaii at Hilo and at Whitman College in Walla Walla, Washington, and visit-

ing scholar at the Institute of International Studies and at the Institute for Governmental Studies at the University of California at Berkeley.

JOHN DAVID ISAACS is the Executive Director and President of the Council for a Livable World, an organization founded in 1962 by eminent nuclear physicist Leo Szilard to warn the public and Congress of the threat of nuclear war. He previously has served as legislative assistant for former New York Representative Stephen Solarz, legislative representative at Americans for Democratic Action and as a Foreign Service Officer. He writes extensively for *Bulletin of the Atomic Scientists*, *Arms Control Today* and other publications.

JESSE JAMES is the Executive Director of the Committee on Nuclear Policy and a Senior Associate at the Henry L. Stimson Center in Washington, D.C. Prior to joining the Stimson Center, he served as Director of the Office Intergovernmental Affairs in the Bureau of Public Affairs at the U.S. Department of State (1997–98). He was an editorial writer and columnist for several years at the *Dallas Morning News* and a Senior Arms Control Analyst at the Arms Control Association in Washington, D.C.

REBECCA JOHNSON is the Executive Director of The Acronym Institute, London, and Managing Editor of the monthly journal, *Disarmament Diplomacy*, in which she writes regularly on multilateral negotiations on weapons of mass destruction and the Conference on Disarmament. She has worked on security and nuclear issues since the early 1980s and is the author numerous reports, including the ACRONYM series on the comprehensive test ban treaty (CTBT) and Nuclear Non-Proliferation Treaty (NPT) negotiations.

DARYL KIMBALL is the Executive Director of the Coalition to Reduce Nuclear Dangers, an alliance of 17 of the largest U.S. nuclear non-proliferation and arms control organizations working together to strengthen national and international security by reducing the threats posed by nuclear weapons.

Since 1997, he has coordinated the Coalition's campaigns for the Comprehensive Test Ban Treaty, nuclear weapons reductions and other nuclear risk reduction measures.

Kimball previously directed research and lobbying on nuclear testing, disarmament and nuclear safety issues for Physicians for Social Responsibility. He has written extensively about nuclear weapons production and testing issues, including articles on radiation health effects research, human radiation experimentation, nuclear weapons testing and nuclear disarmament.

ANDREW F. KREPINEVICH is Executive Director of the Center for Strategic and Budgetary Assessments in Washington, D.C. He also served as a member of the Department of Defense's National Defense Panel.

Krepinevich served on the personal staff of three secretaries of defense and in the Office of Net Assessment at

the Department of Defense. He has taught on the faculties at West Point, George Mason University, Johns Hopkins University School of Advanced International Studies and Georgetown University. He retired from the Army in 1993 after a 21-year career.

MICHAEL KREPON is the President of the Henry L. Stimson Center in Washington, D.C. His areas of interest include phased reductions and elimination of weapons of mass destruction; the utilization of confidence-building measures to alleviate tensions and promote reconciliation, particularly in South Asia. He has held positions at the Carnegie Endowment for International Peace, the United States Arms Control and Disarmament Agency, and the United States House of Representatives, assisting Congressman Norm Dicks.

KENNETH N. LUONGO is a Senior Visiting Fellow at Princeton University and the Executive Director of the Russian-American Nuclear Security Advisory Council, an organization dedicated to the preservation and expansion of U.S.-Russian cooperative nuclear security activities.

Previously, he served as the Senior Advisor to the Secretary of Energy for Non-proliferation Policy and the Director of the Office of Arms Control and Non-proliferation at the U.S. Department of Energy. He also served as Director of the Department of Energy's North Korea Task Force, Director of the Russia and Newly Independent States Nuclear Material Security Task Force, and as Special Assistant for Non-proliferation Issues to Secretary of Energy, Hazel R. O'Leary.

Before joining the Department of Energy, Luongo served as the Senior Washington Representative for Arms Control and International Security with the Union of Concerned Scientists. He previously served as a subcommittee professional staff member on the House Armed Services Committee; legislative assistant for National Defense and International Security and designee to the Senate Armed Services Committee for Senator Carl Levin (D-MI); and legislative assistant for National Security and Foreign Policy and designee to the Senate Defense Appropriations Subcommittee for Senator William Proxmire (D-WI).

Prior to working in the Congress, Luongo served as the Senior Program Associate with the Program on Science, Arms Control, and National Security of the American Association for the Advancement of Science.

ROBERT A. MANNING is a Senior Fellow and Director of Asian Studies at the Council on Foreign Relations. Prior to that he was a Senior Fellow at the Progressive Policy Institute. He is also a consultant to the U.S. Institute of Peace.

From 1989 until March 1993, Manning served as advisor for the Policy to the Assistant Secretary for East Asian and Pacific Affairs, Department of State. He also served as an advisor to the Office of the Secretary of Defense (1988–89). He was diplomatic correspondent for "U.S. News and World Report" (1985–87) and wrote for the *Far Eastern Economic Review* (1979–85).

WILL MARSHALL is President and a founder of the Progressive Policy Institute (PPI) in Washington, D.C. He was the policy director of the Democratic Leadership Council (DLC) from that organization's inception in 1985 until 1989. He is Senior Editor of the DLC's magazine, *The New Democrat*.

Marshall served as press secretary, spokesman and speechwriter for the 1984 United States Senate campaign of current North Carolina Governor Jim Hunt; speechwriter and policy analyst for the late U.S. Representative Gillis Long of Louisiana, Chairman of the House Democratic Caucus; and, spokesman and speechwriter in the 1982 U.S. Senate campaign of former Virginia Lt. Governor Dick Davis. He was a reporter for the *Richmond Times-Dispatch*.

ROBERT McNAMARA served as Secretary of Defense to Presidents John Kennedy and Lyndon Johnson. He is also the former president of the World Bank and the Ford Motor Company.

ALISTAIR MILLAR is Program Director and Director of the Washington, D.C. office of the Fourth Freedom Forum. Before joining the Forum, Millar was a Senior Analyst at the British American Security Information Council.

HARALD MÜLLER is Director of the Peace Research Institute, Frankfurt (PRIF). He is also Co-Chairman of the Advisory Council on Peace and Conflict, Foreign Office, Germany. From 1994–98, he was associate professor at the Technical University Darmstadt. He served as a member of the German Delegation to the Review and Extension Conference of the Nuclear Non-proliferation Treaty (1995). He was also director of international programs for the Peace Research Institute, Frankfurt from 1987–1994). He is a member of the Core Group, Programme for Promoting Nuclear Non-Proliferation (PPNN) and a member of the Advisory Board on Disarmament Matters of the Secretary General of the United Nations.

Previously Müller has worked as the Executive Director of "New Approaches to Non-Proliferation—A European Approach" (1984–1985), and as a member of the "Task Force for the Prevention of International Nuclear Terrorism" (1985–1986).

JANNE NOLAN is a professor of national security studies at Georgetown University and the Director of the Ethics and National Security project at the Century Foundation (formerly the Twentieth Century Fund). She has held several senior positions in both the private sector and government, including as a Senior Fellow at the Brookings Institution, a senior consultant at SAIC, a designee to the Senate Armed Services Committee, and an official at the United States Arms Control and Disarmament Agency.

Nolan currently serves on the Secretary of Defense's Defense Policy Board, the Congressionally-appointed National Defense Panel, the DCI's Advisory Board on Non-Proliferation, and the Sandia National Laboratory's Board of Distinguished Advisors. She previously was the chairman of the

Presidential Review Board on U.S. Arms and Technology Transfer Policy and a member of the 1998 Accountability Review Board chaired by Admiral William Crowe.

CHRISTOPHER PAINE is a Senior Research Associate in the Nuclear Program at the Natural Resources Defense Council in Washington, D.C. and co-director of its nuclear warhead elimination and non-proliferation project. His areas of interest include: analyzing the scope of the Comprehensive Test Ban Treaty and nuclear weapon research activities conducted under the U.S. Stockpile Stewardship and Management Program; exploring the technical verification and institutional arrangements needed to ensure future options for very deep nuclear reductions and eventual transition to a nuclear weapons free world; and assessing the safeguards and "breakout" challenges posed by the closed nuclear fuel cycle.

From 1987 to 1991, Paine was a staff consultant and legislative assistant for nuclear energy and weapons production issues to Senator Edward M. Kennedy. He was a consultant to the Project on Nuclear Policy Alternatives at Princeton University's Center for Energy and Environmental Studies (1985–1987) and served as staff consultant for nuclear non-proliferation policy with the Subcommittee on Energy Conservation and Power, U.S. House of Representatives (1985–86).

Paine was a member of the first western delegation to visit the secret Soviet atomic city, Chelyabinsk-65, in 1989 and was also a part of the U.S. non-governmental technical team that negotiated installation of the first joint U.S.-Soviet seismic monitoring network in the vicinity of the nuclear test site in Kazakhstan in 1986.

ALEXANDER PIKAYEV chairs the Carnegie Endowment of International Peace Moscow Center's Non-Proliferation Program. Prior to coming to the Endowment, Pikayev was Director of the Section on Arms Control and Non-Proliferation at the Institute of World Economy and International Relations. He was also the Chief Counselor of the State Duma's Committee on Defense (1996–97) and Subcommittee on Arms Control and International Security (1994–95). He is a member of the Russian Academy of Science's Commission on Military Reform.

DANIEL T. PLESCH is Director of the British American Security Information Council (BASIC). His areas of expertise include: nuclear disarmament; European security; and the international weapons trade, focusing particularly on light weapons proliferation.

Plesch has testified before the U.S. Senate Foreign Relations Committee on NATO expansion and before the U.S. House Armed Services Committee on Bosnia.

BEN SANDERS is the Executive Chairman of the Programme for Promoting Nuclear Non-Proliferation (PPNN).

Sanders has served as: Deputy Secretary-General to the second Nuclear Non-proliferation Treaty Review (NPT)

Conference in 1980; Secretary-General to the third NPT Review Conference in 1985; and Consultant to the Secretariat of the NPT Review and Extension Conference in 1985, and first (1997) and second (1997) PrepCom of the NPT Review Conference 2000. He was a Consultant to the UN report on measures to facilitate the establishment of a nuclear weapon-free zone in the Middle East (1990). He has also served in the Netherlands Foreign Ministry and the International Atomic Energy Agency.

ANNETTE SCHAPER is a Senior Research Associate for the Non-proliferation Project at the Peace Research Institute, Frankfurt (PRIF). Her research interests include: the scope of the Comprehensive Test Ban Treaty (CTBT); the scope and verification of a fissile materials cutoff; verification of comprehensive disarmament; and the disposition of weapons plutonium.

Schaper has served as a scientific advisor to the German Delegation to the CD during the CTBT negotiations (1994–1996) and as a member of the German Delegation during the Review and Extension Conference of the NPT (1995).

LAWRENCE SCHEINMAN is Distinguished Professor of International Policy and Director of the Washington office of the Monterey Institute of International Studies, and Professor Emeritus, Cornell University. Dr. Scheinman is the former Assistant Director of the United States Arms Control and Disarmament Agency responsible for nonproliferation and regional arms control (1994–1997). He was Head of Delegation to the 1997 PrepCom of the NPT and a senior member of the U.S. Delegation to the 1995 NPT Review and Extension Conference. Previous government service includes Principal Deputy to the Deputy Under-Secretary of State for Security Assistance, Science and Technology (Carter Administration) Head of the Office of International Policy Planning, Energy Research and Development Administration (Ford Administration) and Senior Advisor to the Director-General of the International Atomic Energy Agency (1986–88; 1991).

STEPHEN SCHWARTZ is Executive Director of the Educational Foundation for Nuclear Science and Publisher of *The Bulletin of the Atomic Scientists*. He is an expert on nuclear weapons, including the history and costs of the U.S. nuclear weapons program, weapons research, testing, production, and deployment, nuclear weapons command and control, nuclear weapons-related intelligence collection and analysis, environmental remediation and waste management, nuclear arms control agreements, and congressional oversight of nuclear weapons programs.

From 1994 to 1998, Schwartz was a Guest Scholar with the Foreign Policy Studies Program at the Brookings Institution where he directed the U.S. Nuclear Weapons Cost Study Project. Prior to working at Brookings, he was the Washington Representative for the Military Production Network (now the Alliance for Nuclear Accountability), a national network of more than 40 organizations addressing nuclear weapons production and environmental issues at the Department of Energy's (DOE) nuclear weapons

complex. From 1988 until 1992, he was the first Legislative Director for Nuclear Campaigns at Greenpeace, where he lobbied and conducted research on issues pertaining to the DOE's nuclear weapons and naval nuclear propulsion programs. He also served as Associate Director of the Council on Nuclear Affairs (1987–88) and as Senior Research Assistant for the Adlai E. Stevenson Program on Nuclear Policy at the University of California at Santa Cruz (1985–87).

LEON V. SIGAL is working on a study of cooperation with Russia at the Social Science Research Council in New York. An adjunct professor at Columbia University's School of International and Public Affairs, he was a member of the editorial board of *The New York Times* from 1989 until 1995.

From 1974 to 1989 he taught international politics at Wesleyan University as a professor of government. In 1979 he served as International Affairs Fellow in the Bureau of Politico-Military Affairs at the Department of State and in 1980 as Special Assistant to the Director. He was a Rockefeller Younger Scholar in Foreign Policy Studies at the Brookings Institution in 1972–1974 and a guest scholar there in 1981–1984.

JOHN SIMPSON is the Professor of International Relations at the University of Southampton in England and the Director of its Mountbatten Centre for International Studies. He also serves as the Programme Director of the Programme for Promoting Nuclear Non-Proliferation. From 1982–1984 he served as the United Kingdom representative on the UN Secretary-General's Study Group on Conventional Disarmament, and in 1985 was a member of the UK delegation to the UNESCO conference in Sofia. He has also served as a consultant to the UK Ministry of Defence Arms Control Unit, and from 1992–1998 was a member of the UN Advisory Board for Disarmament Matters.

CLIFFORD SINGER is a professor of nuclear engineering and Director of the Program in Arms Control, Disarmament, and International Security at the University of Illinois at Urbana-Champaign. His research interests include plutonium production and reprocessing in South Asia and arms control in India, Pakistan, and China. He is currently supervising research on global energy economics with emphasis on plutonium production and reprocessing in South Asia and on prospects for negotiations on greenhouse gas emissions between China and India.

JOHN STEINBRUNER is a Senior Fellow at the Brookings Institution and holder of the Sydney Stein, Jr. Chair in International Security. His work has focused on issues of international security policy and related problems of international policies. He is currently Vice-Chair of the Committee on International Security and Arms Control of the National Academy of Sciences.

Steinbruner was Director of the Foreign Policy Studies Program at Brookings from 1978–1996. Prior to joining Brookings, he was an Associate Professor in the School of Organization and Management and in the Department of

Political Science at Yale University from 1976 to 1978. From 1973 to 1976, he served as Associate Professor of Public Policy at the John F. Kennedy School of Government at Harvard University, where he also was Assistant Director of the Program for Science and International Affairs. He has held the positions of Executive Director of the Research Seminar on Bureaucracy, Politics, and Policy at Harvard's Institute of Politics, and of Assistant Professor of Political Science at the Center for International Studies at the Massachusetts Institute of Technology. In recent years he has also served on the Defense Policy Board of the Department of Defense.

STANSFIELD TURNER is on the faculty of the Graduate School of Public Affairs at the University of Maryland at College Park. He has also taught at Yale University and at the U.S. Military Academy at West Point, New York.

He has served as the Director of the Central Intelligence Agency to President Jimmy Carter (1977–1981). Prior to retiring from the U.S. Navy, Turner was promoted to the rank of Admiral in 1975 and became Commander-in-Chief of NATO's Southern Flank, with responsibility for the defense of Italy, Greece, Turkey, and the Mediterranean Sea. He was promoted to Rear Admiral in 1970, and as a flag officer served in command of a Carrier Task group of the Sixth Fleet in the Mediterranean. He also served as the

Director of the Navy's Office of Systems Analysis, and as Commander, Second Fleet and as the 36th President of the Naval War College at Newport, Rhode Island.

FRANK VON HIPPEL, a theoretical physicist, is a Professor of Public and International Affairs at Princeton University and co-principal investigator with Harold Feiveson of Princeton's Program on Nuclear Policy Alternatives.

From September 1993 through 1994, he was on leave as Assistant Director for National Security in the White House Office of Science and Technology Policy, and played a major role in developing U.S.-Russian cooperative programs to increase the security of Russian nuclear-weapons materials. Prior to September 1993 and since January 1995, he has served as chairman of the research arm of the Federation of American Scientists (FAS), where he directs a non-governmental U.S.-Russian cooperative research project on the technical basis for new arms-control and non-proliferation initiatives. He also chairs the editorial board of *Science & Global Security*; and is a member of the editorial board of the *Bulletin of the Atomic Scientists*.

Von Hippel has served on advisory panels to the Congressional Office of Technology Assessment, U.S. Department of Energy, National Science Foundation and U.S. Nuclear Regulatory Commission.

Appendix V

Additional Comments by Alexei Arbatov

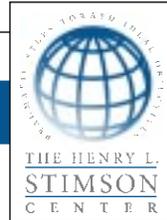
I consider it essential to add a few points. They mainly are related to three big subjects directly adjacent to the realm of offensive nuclear arms. One is anti-missile defenses. The recent U.S. proposal to revise the ABM Treaty should be supplemented by a “grand plan” of jointly developing, testing and commanding this system (while accelerating and upgrading current cooperation on Theater Missile Defense (TMD) and joint early warning systems and command centers).

Another is related to huge and growing Russian inferiority in conventional forces and Russia’s concerns about out-of-area application by U.S./NATO unilateral decisions. It goes without saying that all U.S. nuclear proposals would be scrutinized through this prism. Hence, Conventional Forces in Europe (CFE) Treaty collective ceilings should be deeply reduced (at least by 50 percent). A nuclear-free zone should be legalized by a treaty in Central-Eastern Europe (including the Kaliningrad region). NATO should make a pledge not to use force out-of-area for peace enforcement, unless

under United Nations or Organization for Security and Cooperation in Europe (OSCE) resolution.

Third, proposals on nuclear de-alerting and eliminating hair-trigger and massive strike options seem too declaratory, unverifiable, and may be treated with suspicion in Russia. How about limited decapitating or counter-force strikes? Why not start by declaring a no-first-use concept? What about hair-trigger alerts of submarine-launched ballistic missiles (SLBMs) on patrolling nuclear submarines (SSBNs)? How do you take off alert U.S. weapons slated for reduction under START II when most of those reductions are to be implemented through downloading of Minuteman III and Trident II? I’d prefer proposing a program of gradual “merging” and making transparent Command, Control, Communications and Intelligence (C3I) systems (inspectors and monitors at bases and command posts), which would make surprise attack even physically impossible and remove the need for launch-on-warning (LOW)/launch-under-attack (LUA) options and exercises.

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THE HENRY L. STIMSON CENTER is a private non-profit, non-partisan, independent institution that creates and promotes innovative solutions to the international security and foreign policy challenges of the twenty-first century. Established in 1989, the Center conducts projects that combine in-depth research and analysis with education and outreach to government decision-makers, the media, academia, and the general public, at home and abroad.

The Center is named in honor of Henry L. Stimson, whose distinguished career as a defense and foreign policymaker spanned four decades. Stimson served as secretary of war under President William Howard Taft and secretary of state to President Herbert Hoover. As secretary of war to Franklin D. Roosevelt,

Stimson's responsibilities included the development of the atomic bomb. During his last days in public office, and, indeed, the last years of his life, Stimson was preoccupied with how such a devastating weapon could be controlled.

By establishing a research institution in his name, the Center's founders, hoped to call attention to the issues he cared about, as well as his record of public service, and, to propose, as Stimson did, pragmatic steps toward ideal objectives.

Barry K. Blechman, *Chairman of the Board*
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Committee on Nuclear Policy

**11 DUPONT CIRCLE, NW ■ NINTH FLOOR ■ WASHINGTON, DC 20036
PHONE 202.223.5956 ■ FAX 202.238.9604 ■ WWW.STIMSON.ORG/POLICY/**