



**STRATEGY
RESEARCH
PROJECT**

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

**UNITED STATES AND RUSSIAN NUCLEAR WEAPONS
ARMS CONTROL: WHERE ARE WE NOW?**

BY

LIEUTENANT COLONEL FLOYD E. HUDSON, JR.
United States Army

DISTRIBUTION STATEMENT A:
Approved for Public Release.
Distribution is Unlimited.

USAWC CLASS OF 2000



U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

DTIC QUALITY INSPECTED 4

20000613 165

USAWC STRATEGY RESEARCH PROJECT

**UNITED STATES AND RUSSIAN NUCLEAR WEAPONS ARMS CONTROL:
WHERE ARE WE NOW?**

by

Lieutenant Colonel Floyd E. Hudson, Jr.

United States Army

Colonel James Gordon
Project Advisor

The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

DISTRIBUTION STATEMENT A:
Approved for public release.
Distribution is unlimited.

ABSTRACT

AUTHOR: LTC Floyd E. Hudson, Jr.
TITLE: United States and Russian Nuclear Weapons Arms Control: Where Are We Now?
FORMAT: Strategy Research Project
DATE: 18 April 2000 PAGES: 34 CLASSIFICATION: Unclassified

This paper focuses on the major nuclear weapons arms control efforts between the United States and Russia since the start of the arms race. It begins with a discussion of the threat and actions and reactions of both nations during this period. It then covers Strategic Arms Reduction Talks (START I and START II) in some detail and provides a critique of these efforts.

Finally, the paper attempts to place nuclear weapons arms control in perspective, where are we now in dealing with the monumental and highly technical problems of nuclear weapons arms control. Is our current focus on nuclear weapons arms control the answer to achieving a lasting world peace?

TABLE OF CONTENTS

ABSTRACT	III
ACKNOWLEDGEMENTS.....	VII
LIST OF TABLES.....	IX
UNITED STATES AND RUSSIAN NUCLEAR WEAPONS ARMS CONTROL:.....	1
WHERE ARE WE NOW.....	1
THE START OF THE ARMS RACE.....	2
ACTIONS AND REACTIONS.....	3
START I.....	6
START II.....	6
THE CLINTON ADMINISTRATION'S FOCUS	7
WHERE ARE WE NOW?	8
STATUS OF NUCLEAR ARSENALS	9
FISSILE MATERIAL.....	12
FUTURE NEGOTIATIONS	12
WHAT'S THE MESSAGE?.....	12
DISMANTLE WEAPONS	14
GET RID OF FISSILE MATERIALS.....	15
CONCLUSION.....	15
RECOMMENDATIONS:	16
ENDNOTES	19
BIBLIOGRAPHY.....	23

ACKNOWLEDGEMENTS

Throughout history since the discovery of nuclear weapons there has been much written on this subject. Mainly, on the threat of the use and control of these mighty weapons. Controlling and safe guarding the materials that make these weapons and most significantly preventing the spread of nuclear weapons. Most of the information contained within this paper was obtained from books, newspaper articles, and interviews. This project could not have been possible without the invaluable support and technical assistance of the following individuals: LTC (P) Jeff Horne USA, LTC Dave Richards USAF, Professor Les Griggs, Dr. Craig Nation, Dr. Stephen Blank, and COL James Gordon USA. My sincere thanks to these great Americans for taking the time to share their expertise and focus. I would be remiss if I failed to acknowledge the outstanding technical assistance provided by Professor Patricia Pond, her professional patience and guidance was "second to none". Finally, I want to acknowledge my wife, Robin, first for her heartfelt support and second for helping in the typing of this paper. She was a true partner from the beginning to the end of this paper would not have gone to print without her help and support.

LIST OF TABLES

TABLE 1.....	11
--------------	----

UNITED STATES AND RUSSIAN NUCLEAR WEAPONS ARMS CONTROL: WHERE ARE WE NOW

"The atomic bomb is a means of destruction hitherto unknown, against which there can be no adequate military defense, and in the employment of which no single nation can in fact have a monopoly."

-Harry S. Truman, 1945

"A nuclear disaster, spread by winds and water and fear, could well engulf the great and small, the rich and the poor, the committed and the uncommitted alike. Mankind must put an end to war or war will put an end to mankind."

-John F. Kennedy, 1961

"We must seek agreements which are verifiable, equitable, and militarily significant. Agreements that provide only the appearance of arms control breed dangerous illusions."

-Ronald Reagan, 1982

"Nothing is more important to prevent the spread of nuclear weapons than extending the Non-Proliferation Treaty (NPT) indefinitely and unconditionally... Failure to extend NPT indefinitely could open the door to a world of nuclear trouble."

- Bill Clinton, 1995

Nuclear weapons are by far the most destructive weapons ever devised. The desire to live in peace and harmony without the threat of nuclear war is alive in the hearts and minds of the American people. The potential for nuclear disaster is worse now than at any time since the building of the first nuclear weapon. The spread of nuclear weapons into the control of volatile governments, third world countries, and non-government parties greatly increases the possibility of nuclear attack, or at the least, a nuclear weapons accident.¹

Our past leaders from both Democrat and Republican parties have been vocal in their concern about the need to control nuclear weapons. For U.S. efforts to control nuclear weapons to be successful, the U. S. position must become strictly bipartisan. To deal with the monumental and highly technical problems of nuclear arms control, new tools are needed, and new opportunities must be opened up. Traditional arms control negotiations are no longer a truly effective tool.

This paper will focus on the major nuclear weapons arms control efforts between the United States and Russia since the start of the arms race. It begins with a discussion of the threat and actions and reactions of both nations during this period. It then covers Treaties on Strategic Arms Reduction Talks, START I, START II, and START III and provides a critique of these efforts.

This paper attempts to place nuclear weapons arms control in perspective, where are we now in dealing with the monumental and highly technical problems of nuclear weapons arms control? Is our current focus on nuclear weapons arms control the answer to achieving a lasting world peace?

One of the stumbling blocks in the U.S. path to nuclear arms control was the nation's belief that having an arsenal of nuclear weapons was an equalizer for the weak and "hollow" Army in existence at that time. It was cost effective to produce nuclear weapons, more so than to produce tanks or aircraft. Nuclear weapons were seen as producing "more bang for the buck".²

BACKGROUND

The day the first atomic bomb was detonated in an act of war, the security focus of the world changed forever. It had become possible for mankind to destroy his world. American leaders disagreed about the use of the bomb. The United States developed the bomb and used it in 1945 to hasten the end of the war with Japan. But U.S. leaders were not unanimous in their support for the introduction of atomic weapons. Some U.S. leaders contended that any U.S. technology lead should and could be exploited. Many argued for adaptive procedures to ensure the bomb would never again be used in war. This ambivalence to the use of atomic power is still with us today.³

The U.S. efforts to reduce the probability of nuclear aggression or confrontation are led by the United States Arms Control and Disarmament Agency. Its highest priority is to protect U.S. security against nuclear attack by formulating, coordinating, and implementing informational arms control agreements. As the two major participants, and for a long while the only active players, in a nuclear game of one-upmanship, the focus of nuclear arms control has most often been the negotiations between the U.S and the former Soviet Union.⁴

THE START OF THE ARMS RACE

During the Cold War Era that followed the end of World War II it seemed that the number of nuclear weapons owned was the benchmark by which the U.S. and the former Soviet Union measured their national security. Former allies during World War II, the alliance were sundered by adversarial acts of both countries as they pushed to occupy and to control European turf. The position of the U.S. as an atomic power exacerbated the tension between the two powers.⁵

The Soviets were convinced they were in danger, surrounded by enemies-particularly the U.S. The Soviets, believing they were acting for their own protection, established puppet states in Eastern Europe. They took control of Eastern Germany, successfully splitting Germany for the next twenty-five years. Such soviet actions were unacceptable in the U.S.⁶

Meanwhile, it appeared to the West that the Soviet influence was invasive—they perceived that communism was spreading throughout the world. Americans felt threatened, and the relationship between the United States and the Soviet Union became openly strained. World tension was further heightened when the Soviet Union tested its first atomic weapon in 1949. The Soviet Union's possession of the atomic bomb ended the United States' nuclear monopoly.⁷

In the U.S., leaders debated hotly whether or not there was a need to develop the atomic bomb's big brother, the hydrogen (thermonuclear) bomb. There were no controls in place for guiding or containing the development and production of these mighty weapons and the hydrogen bomb was exponentially more powerful than the atomic bomb. While the debate was still heated, President Truman gave the go-ahead for development of the hydrogen bomb.⁸

Subsequent to the development of the hydrogen bomb, however, when the U.S. was once again in the lead, the United States fought, unsuccessfully, to control the use of nuclear weapons. The U.S. supported the proposal of a world agency to monitor and ensure that atomic energy would be used for peaceful purposes. This was not acceptable with the Soviets. The Soviets wanted all old and newly developed nuclear weapons destroyed before forming a world monitoring and controlling agency. The United States wanted the world agency in place before any nuclear weapons were destroyed. With this impasse the negotiations between the two nations broke down; no compromise was established. The start of the Korean War in 1950, which stretched the already cold relationship, effectively put a halt to efforts between the United States and the Soviet Union for negotiating some type of agreement to control nuclear weapons.⁹

Then the Soviet Union developed the hydrogen bomb, and the United States, not to be outdone, successfully tested a hydrogen bomb. A year later the Soviet Union countered that test with one of their own. The nuclear power race was on. Rather than trying to contain nuclear weapons, the adversaries worked hard to develop and test bigger and bigger bombs. Each side wanted to prove itself the "biggest and toughest" nuclear power on earth.¹⁰

ACTIONS AND REACTIONS

By the time Eisenhower took office there was a state of extreme tension; the threat of military confrontation between the United States and Soviet Union was real. Both governments, aware of the destructive power of such a confrontation, agreed to talk. Combined-level arms-control advisors were appointed and ideas were put forward. But no progress was made in balancing or controlling the development and production of nuclear weapons. Instead, then, seeing nuclear weapons as a cost effective way to maintain military superiority in a dangerous world, the U.S. put a heavy emphasis on nuclear weapons and developed the doctrine of Massive Retaliation.¹¹ The United States declared openly that it probably would strike quickly with nuclear weapons if there were to be a Soviet-U.S. military confrontation anywhere in the world. The U.S. forces in Europe bristled with tactical nuclear weapons, be it artillery shells, bombs, or short range missile. We thought these tactical nuclear weapons were essential

to give an advantage to us and our friends facing what appeared to be a far larger and likely superior Soviet conventional force. And, at the same time, to reduce the opportunity for open confrontation, the U.S. slowed its attempts to shape or influence countries to become western-style democracies, especially in Europe, whenever Soviet opposition was encountered.¹²

In 1957, with talks on nuclear-weapons control at a stand still, the Soviet Union launched the world's first Intercontinental Ballistic Missile (ICBM), known as Sputnik, and the world tilted. It was very clear to the United States that this Soviet accomplishment constituted a tremendous threat to the American homeland. The advent of the ICBM quickly brought about a change in our nuclear weapons strategy and policy. The new policy, calling for "Deterrence and Survival in the Nuclear Age", was founded on the belief that the U.S. faced the threat of unprovoked and surprise attack by ICBMs from the Soviet Union. Determined to lessen risk of attack by increased deterrence, the U.S. worked unremittingly to recover its nuclear primacy by closing the gap in ICBM development. By the end of Eisenhower's second term, the United States had nearly 6200 nuclear weapons. But not many of them were ICBMs facing east.¹³

Fear of the "missile gap" between the U.S. and the Soviet Union was endemic in the early days of the Kennedy administration. Only when the U.S. began receiving pictures from our satellites in space did we come to understand that the missile gap was in favor of the U.S. Nonetheless, Kennedy decided to continue to build up not only our nuclear forces but our conventional forces as well. Kennedy promoted a doctrine of "flexible response," a philosophy 180 degrees away from Eisenhower's policy of massive retaliation. Kennedy believed in the need for a massive build up of both conventional and nuclear forces that would allow the U.S. to react successfully to any type of Soviet aggression. The intent to provide a flexible response, once able to be successful wherever and whenever called forth has held steady; is still a vital part of our present day nuclear strategy.¹⁴

During the Kennedy-Johnson years the U.S. became successful for the first time in negotiating for nuclear arms control. The negotiation of the Limited Test Ban Treaty (LTBT) put a stop to atmospheric tests of nuclear weapons in 1963. The Nonproliferation Treaty (NPT) followed this in 1968. That also was the year that began the Strategic Arms Limitation Talks (SALT I). SALT I called for cuts in launchers and no more addition in ICBM. Those talks, stalled when the Soviet Union invaded Czechoslovakia to "stabilize" that country, were revived in the Johnson administration's final years.¹⁵

During Johnson's term in office U.S. technology bloomed. The U.S. developed a missile system called multiple-independently target-able re-entry vehicles, code named MIRVs. This system was capable of carrying several warheads that could move separately in flight and be programmed to strike different targets in different locations. It is understandable then, that in the early days of his administration President Nixon's focus was much like that of the leaders who had come before him—on being the front runner of the nuclear age. Later he apparently realized that, given the nuclear weapons capabilities of both powers, any nuclear exchange or confrontation would ensure no one would survive victorious.¹⁶ Thus in 1972, despite our having a massive build up of nuclear weapons, the U.S. took the lead in

negotiating the Anti-Ballistic Missile Treaty (ABM). Both the United States and the Soviet Union agreed to the deployment of only one defensive missile site for each country.¹⁷

The early seventies saw technology in nuclear weapons development at its peak for the United States and the Soviet Union. During the Nixon years there was an all-out race to build enough offensive weapons to destroy the other side's missile defense system. New types of missiles, having longer ranges and heavier warhead capability, were developed.¹⁸

But following President Nixon's resignation, President Ford met with the General Secretary of the Soviet Union to negotiate the SALT II Treaty. SALT II would put controls on the development of offensive nuclear weapons. But the Soviets wanted the U.S. to include nuclear warhead cuts on bombers and navy carriers. The U. S. disagreed. Once again, arms control talks stalled.¹⁹

President Carter tried to negotiate a comprehensive "package" with the Soviets. The package called for large-scale cuts in Soviet land-based missiles but no cuts in systems where the U.S. had a clear advantage. The Soviet's, of course, rejected it. Although tensions between the two countries escalated, negotiations continued in Switzerland. Then in 1977 agreements were reached and two years later the SALT II Treaty was signed. The dream was of sharp cuts in the U.S. nuclear arsenal and of total elimination of nuclear weapons in the world. Carter stayed engaged with the Soviets for most of the remainder of his term, fostering a number of other arms control talks. Most important of these was the negotiation of the Comprehensive Test Ban (CTB), which addressed future testing of nuclear explosive devices. Then in December of 1979, the Soviets invaded Afghanistan and U.S.-Soviet relations hit rock bottom. Implementation of SALT II was put on hold and President Carter's vision changed. He directed a new strategy, one authorizing the flexible use of nuclear weapons in war. At the time Carter left office all efforts toward an arms control agreement were suspended.²⁰

President Ronald Reagan, like Eisenhower before him, believed that strength was the key in negotiating with the Soviets. Defense spending was liberal under Reagan, higher than anyone had seen it in the history of the United States. Reagan's policy was simple and straight forward: If the Soviets wanted nuclear war, they would find the U.S. in such a position of strength with nuclear weapons that in any nuclear exchange with the Soviets, the United States would end it as the victors.²¹

Under Reagan the SALT II Treaty remained dormant; the Comprehensive Test Ban talks stopped. Until late 1981 there were no attempts to re-engage talks with the Soviets on nuclear arms control. Then pressure from our European allies caused the administration to re-engage the Soviets. Talks began on Intermediate-range nuclear weapons, but no agreement could be reached in the numbers of missiles deployed in Europe. All efforts to implement treaties remained at a stand still until January 1985, when the U.S. Secretary of State met with the Soviets and arms control talks were rejoined.²²

It was during the Reagan administration that SALT, the Strategic Arms Limitation Talks, was converted to START, the Strategic Arms Reduction Talks. The focus changed from "not increasing" to "reducing" when Reagan decided to negotiate lowering the number of land-based ICBMs (an area of Soviet strength) by 70 percent. Again, the proposal was one-sided in the eyes of the Soviets and they

rejected it. But then, under the Bush administration, progress was made. The United States and the Soviet Union agreed to take the first clear strides toward eliminating an entire category of nuclear weapons. On July 31, 1991, President George Bush and Soviet President Mikhail Gorbachev signed the Strategic Arms Reduction Agreement.²³

START I

START I was signed July 31, 1991, but it was not entered into force until December 5, 1994. The agreement declared that long-range nuclear warheads would be reduced to levels of about 6,000 and delivery systems to about 2,000. Unfortunately, at the end of 1991 the agreement became complicated by the break up of the Soviet Union. The single nuclear entity of the Soviet Union had broken into fifteen independent republics. Russia, Belarus, The Ukraine, and Kazakstan each became an independent nuclear state controlling nuclear weapons. Each of these states would need to accede to a de-nuclearized status.²⁴

It would be three years before START was formally ratified. It took that long for Washington and Moscow, working together, to convince the three smaller countries to move their nuclear weapons to Russia. Under the ratified treaty the five parties (the United States, Russia, Belarus, Kazakstan, and the Ukraine) agreed to semi-annually exchange memorandums of understanding (MOU) containing data providing numbers, types and locations of accountable strategic nuclear weapons. In 1996, the five parties to START I managed to eliminate Strategic Nuclear Delivery Vehicles (SNDUs) and associated launchers well ahead of agreement deadlines. Milestones were achieved within the START I framework when Belarus and Ukraine declared that they had completed transferring to Russia the last of the former Soviet Union's nuclear weapons stationed in their countries.²⁵

START II

On January 3, 1993, shortly before leaving office, President Bush signed a follow-up START II agreement with Russian President Boris Yeltsin that called for both sides to reduce their nuclear arsenals still further, to no more than 3500 warheads by early in the twenty-first century. The implementation of START II, however, is stalled. At this point it seems to be questionable whether or not the Russians will support the treaty. The U.S. supports START II, mainly because it calls for even deeper cuts than did START I. In January 1996 the U.S. Congress was unanimous in its voting to ratify START II. START II treaty ratification would appear to be strongly in the national interest of Russia, just as it is in the interest of the United States.²⁶

The Russian government's position has been steadfast in pursuing ratification of START II. STARTII ratification is in the national interest of Russia, just as it is in the interest of the United States. The Russian Parliament, however, chose to delay ratifying the agreement for six long years. In some part the delay may have been due to the cost of dismantlement of their nuclear weapons. Russia has made plain that costly government ventures are of great concern, considering the poor economic state of their country. The United States agreed to the Russian request to slow down the implementation of START II

by five years to 2007. While the common interpretation of this was the extended deadline, it kept the process alive, it also was a way for the U.S. to help Russia reduce dismantlement costs.²⁷

Some members of the Russian Parliament, however, saw the delays with START II as a Russian political problem rather than as an economic or technical problem. START II was negotiated between 1990 and 1993; and a great many Russians believe they went more than half way at that time. Then they look at NATO's growth and believe the U.S. to be deliberately ignoring Russia's strategic needs and interests.²⁸

The Communist Party, which has attempted to block ratification, lost their majority in the Duma during the elections in December 1999. When Vladimir Putin was elected President in March, he was perceived to be a possible obstacle to ratification. He was former KGB; he has pursued with vigor the War in Chechnya. Putin's call for ratification of STARTII came as somewhat of a surprise. But Putin, speaking to the Duma before the vote, showed considerable strength and determination on behalf of Russia. Putin told the Duma that Russia will pull out of all arms control agreements if the U.S. does not adhere to the ABM Treaty. On 14 April 2000, the Duma voted 288 to 133 to approve the treaty.²⁹

THE CLINTON ADMINISTRATION'S FOCUS

In June 1995, President Clinton revised U.S. Cold War doctrine for nuclear forces and issued new guidelines calling for greater emphasis on deterring a nuclear war. Clinton's decision marks the first time since the end of the Cold War that nuclear targeting guidance from a Commander-in-Chief has formally recognized that no nation could win a "protracted nuclear exchange".

At the start of the Clinton administration our policies on nuclear arms control centered on issues addressed in the ABM Treaty:

- Minimizing the number of nations with nuclear weapons available for use.
- Banning the production of fissile materials for use in nuclear weapons or nuclear explosives and increasing the transparency of arms control.
- Encouraging universal support for the Comprehensive Test Ban Treaty (CTBT).
- Eliminating excessive nuclear stockpiles left over from the Cold War, using the Anti-Ballistic Missile Treaty as the foundation of the reduction.³⁰

President Clinton has partly accomplished the first of these issues by reducing the number of countries of the former Soviet Union whom now hold nuclear weapons. He successfully negotiated the removal of nuclear weapons from the former Soviet States of Ukraine, Belarus, and Kazakhstan. He also has supported steps to help safeguard Russia's nuclear materials.³¹

The U.S. no longer manufactures fissile material. It has produced a sensible plan to convert weapons-grade plutonium in fuel-grade plutonium, an act that is irreversible. Implementation, however, is definitely lagging.

The President's push for the Comprehensive Test Ban Treaty has been temporarily derailed by Congress's refusal to ratify the CTBT. Progress in reducing stockpiles has been in limbo for the past six

years. During the long wait for the Duma to address START II, suggestions were made that Clinton push the process by taking unilateral action in disarming to encourage similar reciprocity from the Russians. Even the Pentagon suggested unilateral cuts, if only to save money on nuclear systems that can't be retired because of the standstill. Clinton's failure to take action on this is attributed by some to his recognizing that Congress is unlikely to support any arms control action put forth by Clinton in this election year.³²

Although President Clinton and Yeltsin agreed in 1997 on the outlines of a START III Treaty, that could cut arsenals by 80% from their Cold War peaks, the Clinton administration seems to be waiting for the Russian Parliament to ratify START II before moving to complete negotiation on a START III. (With the Duma having ratified the Treaty, the upper house is expected to follow suit in the near future.)

It is disappointing that as Clinton leaves office his nuclear policy –

- Still calls for war planners to retain option for nuclear strikes against Russia's military and civilian leadership as well as Moscow's nuclear forces.
- Permits nuclear strikes after enemy attacks involving chemical or biological weapons.
- Continues to rely on nuclear arms as a cornerstone of its national security for the future.³³

WHERE ARE WE NOW?

In the winter of 1999, Spurgeon M. Keeny, Jr., in Arms Control Today stated that "If Clinton does not want to burden his final legacy with the destruction of the ABM Treaty and the strategic arms reduction process," he has a simple alternative to deployment – just say "No!" Clinton, instead, in what may have been an attempt to remove the NMD issue from the presidential campaign, signed legislation on 22 July 1999 proclaiming it to be the policy of the United States to deploy a nuclear missile defense (NMD) system as soon "as technologically possible".³⁴

The policy's stated purpose is to protect all U.S. territories against ballistic missile attacks launched deliberately by "rogue states," and against an accidental or unauthorized missile launch from any source. No one has argued that the threat of rogue states and international factions building or buying nuclear weapons does not exist. But U.S. allies and friends see the NMD program as unnecessary and provocative. Others see it as part of a strategy to allow the U.S. to intervene anywhere with impunity.³⁵

The NMD policy goes against the content of the ABM Treaty. The U. S. wants the ABM Treaty revised to allow the U.S. to mount its NMD system. In a recent UN First Committee vote, only Israel, Latvia, and Micronesia supported U.S. opposition to a resolution supporting the ABM Treaty.

Russia's reaction, as might be expected, has been negative. The United States has tried to state their case about NMD, and point out that the danger of rogue nations armed with ICBM is one that effects both Russia and the United States. The U.S. believes the Russians face a similar threat. The Russians do not agree. They have rejected the suggestion that they might cooperate with the United States in amending the treaty. "We are not engaged in haggling with Americans on the ABM Treaty" said Russian foreign minister Igor Ivanov on October 28, 1999.³⁶

Since then, Russian military leaders have stated more than once that Russia would easily be able to penetrate any missile defense erected by the United States. Nikolai Mihailov, Russia's first deputy defense minister, stated Russia was already considering ways to increase its strategic capabilities to compensate for a U.S. NMD system, including modifying its single-war-head TOPOL-M (also known as the SS-27) to carry re-entry vehicles (this is prohibited by START II, which Russia has just ratified).³⁷

Russia has since taken its public opposition to treaty amendments a step further with a series of "combat readiness" exercises. On November 2, 1999, it launched a missile interceptor from the saryshagan test site in Kazakhstan. The missile was part of Russia's A-135 system, which is deployed in Moscow as Russia's one missile defense permitted under the ABM Treaty. And on November 18, 1999 a Russian nuclear submarine in the Barrents Sea test-fired two ballistic missiles. There also have been talks from Russian military leaders in reference to their extended use of nuclear weapons. Pointedly stating that they saw nothing wrong in the use of tactical nuclear weapons in a conventional war if the national security of Russia was threatened.³⁸

It seems that the U.S. must express its willingness to keep to the "fundamental principles" of the ABM Treaty, if it wishes to close the chasm created by the NMD policy. After meeting with then Acting President Putin in Moscow earlier this year, Secretary of State Madeleine K. Albright and several aides came away encouraged by what they said were signs of flexibility on the ABM issue. The Russian leader was quoted as expressing interest in developing a common threat assessment and considering the U.S. proposals, provided the "fundamental principles" of the ABM Treaty are left in tact. Officials in Moscow have said the main goal of a U.S. and Russian summit, which is still in a preliminary planning stage, would be to jump-start negotiations on a nuclear arms reduction pact as well as address treaty changes to let the U.S. build its nationwide defense against missile attack. A START III agreement, couple with revisions in the 1972 ABM Treaty to allow the United States to build a limited shield against missile attacks, could help convince the U.S. to take initial unilateral steps to implement START II reductions.³⁹

STATUS OF NUCLEAR ARSENALS

Independent of the START negotiations, both the U.S. and Russia have continued to dismantle their nuclear arsenals. In fact, since 1988 the United States has dismantled more than 13,000 nuclear warheads-but while that is more than half of the U.S. nuclear stockpile, it leaves nearly another 13,000 extant. The U.S. can afford to reduce its weapons. Even if U.S. forces must be able to bring Russia to a standstill, Russia's nuclear might is such that the task could be accomplished with far fewer weapons.

According to past President Yeltsin when he was in office, all Russia needed was 1000 nuclear weapons to protect and secure their strategic interest. That is only one-sixth the size of the inventory that will be reduced by the U.S. and Russia under START II. Russian lawmaker Andrei Kokoshin expressed current Russian thinking when he said, "a few modern missiles, capable of breaking through a missile-defense system in a retaliatory strike would be a much more effective deterrent" than attempting to reconstitute an aging strategic missile system.⁴⁰

At present, then, Russia and the U.S. find themselves armed with more weapons than they believe they need to keep their countries secure. They have more nuclear capability than they can afford to update. And in Russia's case more than it can confidently keep operative and safe.

Our current treaties and other recent arms-control agreements and initiatives are producing some reductions in nuclear arsenals in the United States and in the new independent states of the former Soviet Union. But comparing the number of START-accountable deployed warheads declared in the initial September 1990 MOU with data from the July 1991 MOU (See table 1) clearly shows just how little progress actually has been made in reducing nuclear weapons.⁴¹

STRATEGIC ARMS REDUCTION TALKS I (START I) was signed July 31, 1991, and entered into force on December 5, 1994. Under the treaty, the five parties—the United States, Russia, Belarus, Kazakhstan, and Ukraine—semiannually exchange memorandum of understanding (MOU) data providing numbers, types and locations of accountable strategic nuclear weapons. The table below compares the number of START-accountable deployed warheads declared in the initial September 1990 MOU with data from the July 1999 MOU, demonstrating the little progress made in nuclear force reduction so far.

**U.S. Strategic Forces
Warheads by Delivery System 1**

	Sept. 1990	July 1999
3		
ICBMs		
MX/Peacekeeper	500	500
Minuteman III	1,500	1,950
Minuteman II	450	1
Total	2,450	2,451
SLBMS		
Poseidon (C-3)	1,920	320
Trident (C-4)	3,072	1,536
Trident (D-5)	768	1,920
Total	5,760	3,776
Bombers		
B-52 (ALCM)	1,968	1,430
B-52 (Non-ALCM)	290	47
B-1	95	91
B-2	0	20
Total	2,353	1,588
Total Warheads	10,563	7,815

**Soviet/Russian Strategic Forces
Warhead by Delivery System 1**

	Sept.1990 2	July 1999
ICBMs		
SS-11	326	0
SS-13	40	0
SS-17	188	0
SS-18	3,080	1,800
SS-19	1,800	960
SS-24 (silo)	560	500
SS-24 (rail)	330	360
SS-25	288	360
SS-27 4 (silo)	-	10
SS-27 4 (road)	-	0
Total	6,612	3,990
SLBMs		
SS-N-6	192	0
SS-N-8	280	128
SS-N-17	12	0
SS-N-18	672	624
SS-N-20	1,200	1,200
SS-N-23	448	448
Total	2,804	2,400
Bombers		
Bear (ALCM)	672	696
Bear (Non-ALCM)	63	4
Blackjack	120	184
Total	855	884
Total Warheads	10,271	7,274

Notes

1. Warhead attributions are based on START I counting rules. This results in bombers having fewer warheads attributed to them than they actually carry. On the other hand, even though all nuclear warheads from Ukraine have been removed to Russia, they remain START – accountable until the delivery system has been destroyed.
2. Includes weapons in Belarus, Kazakhstan, Russia, and Ukraine.
3. Weapons in Russia only.
4. Also known as the TOPOL-M or RS-12m Variant 2 ICBM.¹

TABLE 1

The Cold War record demonstrates the worth of hand-in hand arms control, with Moscow and Washington preceding by negotiation, reducing nuclear risks and cost in tandem and verifying the results in mutual confidence. But the U.S. could, if need be, unilaterally take action to store its strategic nuclear weapons. In 1991, President Bush removed all tactical nukes from positions in Europe and Mr. Gorbachev swiftly matched that move. If the Russians agree to modify the ABM Treaty for the U.S., such an action would be appropriate. As in 1991, it would do away with long negotiation and ratification processes of the past. When started, it could reduce the number of nuclear arms faster than any action seen in our past Cold-War-Era arms control process.⁴²

FISSILE MATERIAL

In 1992, even before negotiations began for the Comprehensive Test Ban Treaty, the U.S. stopped testing nuclear weapons. The United States has not produced fissile materials for nuclear weapons since it unilaterally halted testing and production of nuclear weapons.

The disposal of surplus weapons plutonium, however is another matter all together. The U.S. had chosen to follow a "dual tract" plan for its plutonium disposal. Most of the plutonium will be blended with uranium to produce mixed-oxide fuel for commercial reactors. The rest will be encased in glass for underground burial. The plan is sound – weapons plutonium is disabled when converted to mixed-oxide fuel and cannot be reused in warheads or pose a security problem.⁴³

But four years after President Clinton promised to dispose of 50 tons of weapons plutonium on a parallel course with Russia under the megatons to megawatts program, not one ounce of plutonium has been destroyed. The failure of the U.S. to take steps to make its surplus weapons plutonium unsuitable warheads has dissuaded Russia from disabling its own plutonium.

Despite Congress's failure to ratify the Comprehensive Test Ban Treaty, the United States continues to declare itself committed to bringing the Test Ban Treaty into force. The U.S. has said it will continue to work for negotiations on a treaty that will ban for all time the production of fissile materials for nuclear explosives. Should that be the case, it would behoove the U.S. to begin execution of its plan calling for the reduction of fissile stockpiles and to place tighter controls on bomb-making materials.⁴⁴

FUTURE NEGOTIATIONS

In future negotiations we have at least four main areas to deal with. We must negotiate with Russia to modify the ABM Treaty to allow the U.S. to field its NMD. We must find a way to speedily dismantle stockpiled weapons to reduce the possibility of a nuclear accident. And we must persuade ourselves as well as the Russians to begin reducing stockpiles of fissile materials and to place tighter controls on bomb-making materials.

WHAT'S THE MESSAGE?

Given the contention over the U.S. policy implementing the NMD system, motivating Russia to move in our direction of thinking will not be easy. Our public acts or statements often send mixed

messages. Consider, for example, the U.S. push for the Comprehensive Test Ban Treaty. The test ban treaty, which reduces the ability of non-nuclear powers to develop nuclear weapons, had the support of the U.S. military and scientific establishment. It had the support of political leaders around the world. And it had the support of more than 80 percent of the American public. But the U.S. Senate voted against ratification.⁴⁵

The U.S. may see the Senate's rejection of the nuclear test ban treaty as the result of U.S. internal politics. The Senate's action has been considered a political victory for those Republicans who see arms control, in and of itself, as the enemy. But what the Russians are more likely to see is that the U.S. could not deliver on its negotiated promises.

We have been sending other mixed messages as well. Despite U.S. assurances before the unification of East and West Germany that NATO would not move eastward, the United States has been a supporter of NATO's expansion eastward. In the face of very strong Russian rejection of the bombing campaign against the former Yugoslavia, the U.S. continued to lead the air campaign. To the Russians, this action was a direct disregard for, and threat to, Russia.⁴⁶

Is it so surprising then, that when U.S. President Clinton signs legislation declaring it U.S. policy to put in place a nuclear missile defense (NMD) as soon as possible, Russia's political and military authorities see the U.S. anti-missile project as suspect? They distrust U.S. claims that the network of ground-based interceptors and radar is intended only to shoot down a few missiles from "rogue" states, not to make Moscow's huge nuclear arsenal obsolete.⁴⁷

The key to moving forward on nuclear arms control with Russia lacks in our understanding of Russia, the Russian people, and their current domestic and economic situations. There are also other uncertainties that should raise concerns as to the position and focus of the Russians. Relations between the U.S. and the Russians have become fragile following the wars in Chechnya and the Balkans. And most Russians seem to believe that the problems they are currently faced with are faults of the United States. Because of Russia's current internal situation, great caution must be taken in our negotiations with them.

With the breakup of the former Soviet Union, Russia has gone from being the leading part of a super power to being an economically unstable second-class country. Russia, not unexpectedly, wants to regain its world position and prestige even as it is barely surviving. An overwhelming number of Russians believe that their international importance comes from the nuclear weapons that are in their possession. According to Anatol Lieven, when discussing the emotional mood of the country, "Every Russian with a sense of history ought to go down on his knees every morning and thank his or her God for the existence of nuclear weapons."⁴⁸

Nuclear dangers in Russia seem to be approaching faster than solutions can be found to offset them. Moscow continues to control the world's second largest arsenal of nuclear weapons. The program to dismantle old Soviet weapons is working, but many heavy multiple-warhead land-based missiles are rusting out. Maintenance funds are short. Money is unavailable to build the stable, single-warhead

missiles meant to replace the present heavy ones. Inadequate security programs allow relatively easy access to nuclear weapons and materials. And Russia's political and military organizations are rife with black-marketers and petty criminals just hunting for an easy way to make money or obtain better goods for themselves and their families.

From the U.S. perspective, future negotiations must first address our security concerns over the problem of custody and control of Russian nuclear weapons.⁴⁹

If we are serious about becoming secure from the opportunity for nuclear disaster from the Russians, we should consider undertaking the measure recommended by The Committee on Nuclear Policy, a distinguished panel organized by the Center for Strategic and International Studies in Washington. The Committee, composed of experts in Congress, academia, and industry, was formed in January 1997. It is a collaborative group of about 40 project directors from non-governmental organizations who research nuclear weapons policy issues.⁵⁰

The Committee has recently taken the position that action to reduce the likelihood of a nuclear disaster is now imperative. They believe that as time passes the chances of a nuclear accident happening in Russia or from the tons of bomb-making material that are falling into hostile hands becomes probable, rather than possible. The Committee has stated that it does not "...fear the Russian nuclear complex because they're making warheads to break out of the START process, we fear the Russian nuclear complex because it's unstable, and it's underfunded, and it's oversized. These statements have been made by Russian officials themselves."⁵¹

The Committee has put together what it calls a set of "parallel, reciprocal, and verifiable measures with which to engage Russia" in order to reduce the nuclear danger. The Committee's measures are believed similar to those offered by President George Bush and reciprocated by Russian President Mikhail Gorbachev in 1991. The measures call for deep reductions in nuclear forces, for removing nuclear forces from quick launch status, and for enplacing tighter controls on, and greater reductions in, bomb-making materials and warheads. The Committee sees their measures as a plan of action, a coherent, comprehensive way to re-energize the strategic arms reduction process.⁵²

DISMANTLE WEAPONS

The U.S. could disassemble a high number of strategic nuclear weapons and immediately put them in storage in areas that could be verified by Russian observers, and ask, not DEMAND that the Russian's join in this move.

The heart of the whole issue is the need to eliminate the massive attack options from the war plans of both sides.

Reduce the susceptibility of U.S. and Russian forces to inadvertent or accidental or mistaken launch.

Immediately take off alert all weapons slated for elimination under START II (as Bush did in 1991). We should do that whether or not the Russian Duma ratifies START II.

Seek a total stand-down of the nuclear arsenals possessed by all P-5 countries. Britain, France and China are essentially off alert in peacetime. The key change would be to make that status transparent to everyone else, particularly to the Russians, who have argued with us that they would not be prepared for total stand-down of their arsenal until all the other states joined into the regime.

Immediately announce the elimination of the accident-prone option of launch-on-warning from their strategic war plans. These commitments would be implemented by procedural changes much along the lines of the procedural changes that the U.S. made in the 1980s when we took China out of the war plans.

Deterrents, we believe, could be amply satisfied and operational safety could be better served by far smaller options and arsenals on far lower alert.

It would smooth over an emerging wrinkle of sharp numerical inequality favoring the United States in strategic arsenals due to the tailspin into which Russian strategic forces are headed in the future. De-alerting could compensate for that inequality.⁵³

GET RID OF FISSILE MATERIALS

The U.S. already has a workable plan for eliminating surplus fissile material. The U.S. must make a Start at following it. Additionally, there is a good program called the Highly-Enriched Uranium Purchase Agreement. That program should be expanded. The focus up until now has been on putting in place technological systems that will detect the movement of this material, or databases where the amount of material can be collected, and the like. What needs to be done now is to focus on the people who operate the systems and the people who maintain the systems. Nuclear material lives forever. Will there be enough people in 10, 20, 30 years that will participate in the process of protecting this material well into the next century? There has to be a program to sustain the custodians of this effort well into the future.⁵⁴

CONCLUSION

U.S. Secretary of State Madeline Albright told the International Herald Tribune that "looking forward, the nuclear danger clearly has not ended. We have a long way to go on the road to disarmament, to universal acceptance of nonproliferation norms and full compliance with nonproliferation commitments but we can not get there without a strong nonproliferation treaty. We urge all nations to help preserve and reinforce this important treaty."

Agreements that result from arms control negotiations are the cornerstone to peace in the world. Arms control talks can reduce the risk of war. Implemented arms control can reduce the cost of readiness preparation for war.

If arms control negotiations are to be revived, leaders and policy makers have to be forthright about arms control negotiations. The United States needs to state its position, up front, that the Cold War is over and the U.S. means business in reducing and controlling nuclear weapons.

The implementation of a new phase of arms control negotiations between the United States and the Soviet Union. The arms control should focus less on threats (the focus of START I and START II) AND MORE ON equalizing nuclear power between the two countries rather than pointing fingers at each other and making threats.

It is clearly time for the United States and Russia to return to the negotiation table and begin a new phase on arms control. Ratification of START II will be a key issue in starting negotiations with momentum. No one in this country wants to go to war with another country without first trying to negotiate peace. Today's uncertain world politics clearly complicate traditional arms control negotiations. But the instability in Russia's nuclear security program is real. Those who would argue two years ago that the threat from the former Soviet Union had lessened are less likely to argue this now. Our need to help prevent the use of nuclear weapons remains very high.

In a joint venture of cooperation, the U.S. and Russia could prevent the proliferation of nuclear material and, nuclear weapons through theft and diversion and irreversibly reduce the stockpiles of fissile material in both countries.⁵⁵

RECOMMENDATIONS:

The implementation of a new phase of arms control negotiations that focuses 180 degrees out from our past Cold War attempts on arms control issues between the United States and the Soviet Union. For just cause and peace, the new phase should be filled with fresh new realistic approaches and ideas. The new arms control should focus less on threats, and "in your window deterrence" (the focus of START I and START II) than trying to hold a nuclear weapons program together with "sea grass strings". The goals and objectives should be more to equalize nuclear power between the two countries and less on pointing fingers at each other and making threats. We need to get other nuclear powers involved in this process and get a world focus. However, clearly the United States and Russia must take the first steps because of the number of nuclear weapons under their control. The United States needs to state its position up front, the Cold War is over forever and there will be no revanchist thoughts to demonstrate that the U.S. means business in reducing and controlling nuclear weapons. The U.S. could disassemble a high number of strategic nuclear weapons and immediately put them in storage in areas that could be verified by Russian observers, and ask, not mandate that the Russian's join in this move. Would the new President of Russia do it? He probably would if you consider their current economic and world position. He might also take into consideration past President Yeltsin's rhetoric that all Russia needed was 1000 nuclear weapons to protect and secure their strategic interest. This process could move just as fast as the 1991 Bush and Gorbachev deal when President Bush removed all tactical nukes from positions in Europe and Mr. Gorbachev matched that feat. The process could be set up easily by President Clinton and Russia's President Putin, this phase/process could focus the reduction of nuclear arms faster than anyone could envision considering our past Cold-War-era arms control process.⁵⁶

In short, if arms control negotiations are to be revived, leaders and policy makers have to be forthright about arms control negotiations. Arms control talks can reduce the risk of war, however, not

eliminate war. Good implemented arms control talks can reduce the cost of readiness preparation for war, but the weight of military preparation will remain high as long as current world political processes remains in its current form. Agreements that result from arms control negotiations are the cornerstone to peace in the world. However, they are not the end all process to peace, it takes a total international focus on all issues, political, economic, military and in some cases religious to get the job done.⁵⁷

Word Count = 7333

ENDNOTES

¹ Teena Karsa Mayers, A Guide to the Issues, Understanding Nuclear Weapons and Arms Control, 5 March 1987, p.1.

² Ibid p.3 and 4.

³ Ibid p. 5 and 6.

⁴ Ibid p. 9-12.

⁵ Ibid p. 13-17.

⁶ Ibid p.19.

⁷ Ibid p. 23-36.

⁸ Ibid p. 41-47.

⁹ Ibid p. 51.

¹⁰ Ibid p.53.

¹¹ Ibid p.55.

¹² Ibid p.56.

¹³ Ibid p.57.

¹⁴ U.S. Nuclear Strategy Reform in the 1990's by Hans M. Kristensen, December 1999, p.3.

¹⁵ Ibid p.6.

¹⁶ Ibid p. 8 and 9.

¹⁷ Ibid p. 11.

¹⁸ Ibid p. 13.

¹⁹ Kwieciak, Stanley, Arms Control, Past, Present and its Potential Usefulness, June 7, 1988, p.6.

²⁰ Ibid p.7 and 8.

²¹ Ibid p. 11.

²² Ibid p. 13.

²³ Ibid p.15.

²⁴ A Publication of the Arms Control Association Vol.29, Number 7, Arms Control Today, p. 15 and 16.

²⁵ Ibid p. 17.

²⁶ Ibid p.18.

²⁷ Ibid p. 19.

²⁸ Ibid p. 20.

²⁹ Ibid p. 22.

³⁰ The Clinton Foreign Policy Reader, Presidential Speeches with Commentary edited by Alvin Z. Rubinstein and Boris Zlotnikov, copyright Feb. 2000 by M.E. Sharpe, Inc. p.234.

³¹ Ibid p. 235.

³² Ibid p. 236.

³³ Ibid p. 338.

³⁴ A Publication of the Arms Control Association, vol. 30, no. 8, National Missile Defense:p.8.

³⁵ Ibid p. 9

³⁶ Ibid p. 11

³⁷ Ibid p.13

³⁸ Ibid p. 14 and 15

³⁹ Ibid p. 19

⁴⁰ Ten Reasons why Nuclear Deterrence Could Fail: The Case for Reassessing U.S. Nuclear Policies and Plans by Dr. John M. Weinstein p. 2 and 3.

⁴¹ Ibid p. 4

⁴² Ibid p.6

⁴³ Ibid p. 7

⁴⁴ How a Limited National Missile Defense Would Impact the ABM Treaty by George Lewis, p. 34.

⁴⁵ A Publication of the Arms Control Association, vol. 29, no. 7, Arms Control Today, National Missile Defense: Collision in Progress by John Steinbrutter, p.16.

⁴⁶ Ibid p.21

⁴⁷ Ibid p. 25 and Interview with Dr. Craig Nation, 3 March 2000.

⁴⁸ Ibid p. 28 and 29

⁴⁹ National Missile Defense Review Committee Report : Text of the Welch Reportt, The Georgetown Journal of Internal Affairs, p.17 and 19.

⁵⁰ The Los Angeles Times, copyright 1999, Times Mirror Company, May 23, 1999, Sunday, Home Edition, p.1.

⁵¹ Ibid p. 3

⁵² Ballistic Arms Control, Brown, Justin, "Focusing a Rethink of Global Security" The Christian Science Monitor, November 12, 1999, p. 1 and 6.

⁵³ Sheppard, Ben. Ballistic Missile Proliferation: A Flight of Fantasy or Fear?" Jane's Intelligence Review. October 1999.p.50.

⁵⁴ Wall, Robert. "Short, Medium-Range Missiles are Increasing Threats to U.S.", Aviation Week and Space Technology, September 20, 1999, p. 34.

⁵⁵ Preventive Defense a New Strategy for America by Ashton B. Carter and William J. Perry, The Brookings Institution, 1775 Massachusetts Avenue N.W., Washington, D.C. 20035, p. 61.

⁵⁶ Ibid p. 82 and 88

⁵⁷ Ibid p. 103

BIBLIOGRAPHY

- Armaments, Disarmament, and International Security", Stockholm International Peace Research Institute. Oxford, University, 1997.
- "Arms Control and Disarmament Agreements", The United States Arms Control and Disarmament Agency, Washington, D.C., 31 July 1991.
- Barton, John H., The Politics of Peace an Evaluation of Arms Control, Stanford, California: Stanford University Press, Stanford, California, 1981.
- Blank, Stephen, Doctor, U.S. Army War College, Carlisle Barracks, PA. Interview by author 19 February 2000 and 10 March 2000.
- Brown, James, Arms Control in a Multi-Polar World, Amsterdam: University Press, 1996
- Carter, Ashton B., Preventive Defense a New Security Strategy for America, Washington, D.C., the Brooking Institution, 1999.
- "Countering the Missile Threat", International Military Strategies; produced and published by the Jewish Institute for National Security Affairs, Washington, D.C., 1999.
- "Damage Assessment the Senate Rejection of the CTBT", Arms Control Today, vol.29, no.6, September/October 1999.
- "Economic and Social Consequences of Disarmament", Report of the Secretary General Transmitting the Study of his Consultation Group, Department of Economic and Social Affairs, United Nations, New York, November 1965.
- Goldblat, Jozef, Arms Control A Guide to Negotiations and Agreements, International Peace Research Institute, Oslo, 1994.
- Johnson, Kevin, D., Russia, The United States and Nuclear Proliferation, The Institute of Land Warfare, Association of the United States Army, Number 30; September 1998.
- Kolkowicz, Ruman, Arms Control and International Security, Westview Press/Boulder, Colorado, 5 April 1985.
- Mayers, Teena K., Understanding Nuclear Weapons and Arms Control, A Guide to Issues, Third Edition revised, International Defense Publishers, Washington, D. C., New York and London, 5 March 1987.
- Moodie, Michael, Conventional Arms Control and Defense Acquisition: Catching the Caboose, The Center for Strategic and International Studies, Washington, D. C., Volume XII, Number 3, 19 November 1991.
- Nation, Craig, Doctor, U.S. Army War College, Carlisle Barracks, PA. Interview by author 6 March 2000 and attended lecture on 14 March 2000.
- "National Defense Collision in Progress", Arms Control Today, Volume 29, Number 7, November 1999.
- Nolan, Janne E., An Elusive Consensus, Nuclear Weapons and American Security After the Cold War, Washington, D.C. Brooking Institution Press, 26 August 1999.
- "Perceptions", Journal of International Affairs, Volume IV, Number 1, March-May 1999.

Rubinstein, Alvin, Fflbina Shayevich, and Boris Zlotnikov, The Clinton Foreign Policy Reader, Presidential Speeches with Commentary, M.E. Sharp, Inc. copyright February 2000.

"Russia on the Eve", The Washington Quarterly, vol. 23, no. 1, Center for Strategic and International Studies, 1999.

"Strategic Assessment", Engaging Power for Peace, Institute for National Strategic Studies, National Defense University. Washington, D. C., 1998.

"The Russian Review", An American Quarterly Devoted to Russia: Past and Present, vol. 57, no. 3, July 1998.

"Threat and Response" Office of the Secretary of Defense, U.S. Government Printing Office, Washington, D.C. November 1997.

The Soviet Position of Arms Control and Disarmament Negotiations and Propaganda; Center for International Studies, Massachusetts Institute of Technology, Cambridge, Massachusetts, 15 April 1995.

The United Nations Disarmament Yearbook, vol. 20, copyright United Nations, 1996.

Towle, Philip, Arms Control and East West Relations, St. Martin's Press, Inc. New York, N.Y. 1983.