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Russian Arms Control Compliance and Implementation

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Pragmatic steps toward ideal objectives



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Executive Summary

In this study the essence of the problems of Russian treaty compliance is analyzed in its technical, strategic, political, and legal dimensions. The motives and capabilities of various states and institutions involved are assessed. Alternative options for sorting out the emerging issues are reviewed. Additionally, the role of U.S. policy and its potential effects are the subject of special attention.

Before making more specific observations on the problems of treaty compliance, two questions of a general nature should be answered. The first is, why bother about compliance if Russia and the West are no longer enemies and Russian military power has declined too much anyway to represent a real threat in the foreseeable future?

Indeed, the arms control regimes as they evolved during three decades from the early 1960s until the early 1990s were primarily adopted in the Cold War strategic and political environment. They were designed to introduce some rules of the game for the arms race and insert a measure of moderation and predictability into the "mortal rivalry" between East and West. The end of the Cold War, the demise of the Warsaw Pact, and the abrupt disintegration of the Soviet communist empire left the established arms control regimes seemingly irrelevant to the new relations and security concerns of nations.

Such perceptions did not last for long, however. The euphoria about new relations between Russia and the West evaporated in two years. It became clear that these relations would not be easy and free of tensions, even if the unscrupulous geostrategic rivalry of the Cold War was a thing of the past. The military aspect of relations still matters, although no longer as overwhelmingly as before. The Cold War has left a legacy of enormous arsenals of weapons and forces that are clearly superfluous for the future but slow and expensive to get rid of. This very process requires some agreed dismantling guidelines.

New opportunities for more radical agreements to reduce arms and for genuine military partnership have to be explored, capitalizing on the existing thirty-year investment in arms control, including its sophisticated verification networks and confidence-building measures. And despite the decline of Russia's defense capability, Russia remains one of the principal military powers in the world. In addition to a stable and jointly managed strategic relationship with Russia, the West needs Moscow's cooperation on many other issues, such as non-proliferation, conflict resolution, and peace-keeping, all of which are deeply intertwined.

The second general question is, why all the hair-splitting about compliance when the West can just take a tough position on every issue and make it stick?

The reason is that the drastic reduction and retreat of Moscow's military power in 1987-93, whether by agreement or by unilateral action, were undertaken primarily in order to improve Soviet and then Russian relations with the West. It was not a defeat in the Cold War that made Moscow do this. Rather, it was Moscow's desire to change

relations with its former opponents and stop strategic confrontation that ended the Cold War.

This trend, however, is not irreversible. Profound domestic transformation in Russia and a radically changed external environment have created problems for Russian compliance with various arms control regimes. Reactionary and nationalist forces in Russia are trying to discredit these regimes and relations with the West in order to mobilize Russia for a counteroffensive after the retreat of the last five years.

Russia needs arms control regimes no less than the United States and its allies. But whereas the West finds itself indebted to Russia for its present state of enhanced security in the wake of the Cold War, Russia finds itself feeling deeply insecure as a result of domestic turmoil and calamities along its borders. For this reason, the West should show flexibility and understanding in its policy on this subject. Furthermore, the West needs Russia's cooperation in order to preserve its newly achieved security in the future.

This is where the problem of compliance comes into play as an important element of emerging post-Cold War international politics. U.S. policy on this matter will be crucial for both the survival and further development of arms control regimes and for future U.S.-Russian and Western-Russian relations.

There are five main factors contributing to Russian compliance problems:

- the disintegration of the USSR and controversies among successor states;
- the economic crisis and the lack of financial or technological resources in the Commonwealth of Independent States (CIS);
- the disintegration of centralized political control over state and private organizations with vested interests in violating international agreements;
- the active domestic political opposition to treaty implementation and compliance; and
- the development of new threat perceptions and defense requirements that put into question the compatibility of compliance with national interests.

During the next ten to fifteen years, potential sources or reasons for compliance concerns on the part of Russia may differ from case to case and may vary with time. To deal with such fluctuations in a constructive way will require insight, ingenuity, and selectivity on the part of the United States.

The disintegration of the USSR and complicated relations among its successor states will most strongly affect strategic arms control, in particular the future of Strategic Arms Reduction Treaty (START) I and START II. These same two factors will also affect cooperation on the dismantlement of nuclear weapons and the utilization of uranium, and may also generate compliance questions concerning the Anti-Ballistic Missile (ABM) Treaty and the Conventional Forces in Europe (CFE) Treaty. More active and innovative U.S. mediation between Russia and other republics that places military relations into a broader arms control context will be instrumental in resolving these problems as well as important in a more general political sense.

The economic crisis and budgetary constraints will not affect compliance with the ABM Treaty, the Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, the Biological Weapons Convention (BWC), and Treaty on the Elimination of Intermediate- and Shorter-Range Missiles (INF Treaty). Economic factors will, however, exert a very serious impact on other agreements which are listed here in order of financial impact: the Chemical Weapons Convention (CWC), START I and START II, CFE, the Missile Technology Control Regime (MTCR), and "Cooperative Denuclearization." This impact may have two principal forms: compliance might be too expensive to exercise, or non-compliance may be too lucrative economically to resist.

U.S. and western financial and technological aid might make valuable contributions in alleviating compliance problems arising from economic factors. Western policy toward post-Soviet states and arms control compliance (as with nuclear exports and the MTCR) must impress on Moscow, Kiev, and other capitals that compliance will pay off more than non-compliance and that the West is not trying to restrain Russia (or other republics) in order to enhance its own economic competitiveness. In some cases certain treaty amendments to alleviate the economic strains of compliance would be strategically reasonable and politically effective (i.e., START II provisions on downloading and silo conversion, CFE storage rules).

The disorganization of Russia's administrative structures and the vested interests of the armed forces, defense industries, and other groups may mostly affect compliance with the CWC, the BWC, the MTCR, "Cooperative Denuclearization," the CFE Treaty, and, in the longer run, the ABM Treaty. The best way for the United States to deal with this problem is to bring it to the attention of Russian political leaders as early as possible and to take a very strong stance, linking compliance to other areas of relations with Russia. Also of great importance would be parallel channels of communication, information, and joint assessments of the issues: between parliaments, expert councils, special commissions, reporting to the state leaders, etc.

Domestic opposition to the treaties, either on political, strategic, or economic grounds may mostly affect START II, CWC, MTCR, and CFE. The way to address this source of compliance concerns is for the United States and its allies to persuade the Russian Parliament and public opinion that disarmament on its own terms is no less beneficial for Russia's security than it is for the West's security. Western financial aid for disarmament measures may give the unfortunate impression that the West is willing to finance Russian disarmament because the terms of disarmament so favor the West over Russia. In this case, additional initiatives on arms reductions and limitations affecting Western forces (which are superior) would be instrumental to dispel this opinion, in particular on START II and CFE. Such actions would be more effective than additional economic aid beyond that already allocated. Technological assistance might be of importance in many selective cases (some issues of START I and II, CWC, and "Cooperative Denuclearization"), especially if jointly developed with Russians and applied to U.S. disarmament as well.

Finally, new threat perceptions can hamper compliance with CFE, START II, tactical nuclear weapons reductions, BWC, and, in the longer run, the ABM Treaty. What is required here is a combination of additional unilateral reductions and limitations from

the West (START II), new agreements to further reduce forces and to formalize parallel unilateral initiatives (tactical nuclear weapons), flexibility in addressing Russia's concerns in particular areas to preserve the general framework of arms control restraints on Russia's forces and programs (CFE), more transparency and enhancement measures (BWC), and caution in proposing liberalizing amendments (ABM).

Obviously, such a sophisticated policy would be a great challenge to the United States and would likely overtax any state's policy-making system. Unfortunately at present, there is no other country to do the job, and the importance of the subject certainly merits the effort.

This study should not be misunderstood. The authors do not wish to leave the impression that nobody in Russia is presently interested in treaty compliance and that everything depends only on external management. There are many groups in the Foreign Ministry, defense establishment (first of all, in the Strategic Rocket Forces Command), Parliament, academic community, and mass media that support arms control and argue in favor of various follow-on steps in this direction. Nevertheless, after the October–December 1993 events in Russia, conservative, nationalist, and anti-Western forces are clearly on the counteroffensive. Every foreign policy issue, including arms control and compliance, has become a subject of contention, and the proponents of arms control have to fight hard for every point, incurring political risks in the process. Moreover, the top Russian leadership's shift towards authoritarian rule has made it much more dependent on military and security institutions, defense industrial echelons, and other conservative forces of society. The constant attempts to curtail the authority of Parliament and the judicial branch and concentrate all powers in the hands of the president in reality deprive the president of real control over the bureaucracy.

The future of Moscow's foreign policy, including compliance with arms control treaties, will be defined most of all by Russia's domestic evolution, foremost by the ability of democratic groups to organize a broad coalition in Parliament and the society at large to provide a program for correcting the great economic and political blunders of 1992–93, and to counter the authoritarian and nationalist proclivities of the executive establishment. The United States and the West in general cannot do much to affect this evolution as their deep involvement in Russia's domestic affairs in 1992–93 was mostly counterproductive.

In contrast, the United States can have a positive impact on affecting Russian compliance and further arms control agreements. These issues are not only important for Russia's international relations. They have also become quite prominent as domestic political issues and as elements of democratic economic and political reforms at home. Compliance and arms control are closely associated with demilitarization and cooperative relations with the United States, Western Europe, and Japan.

Generally speaking, the main task of Western strategy is to persuade the new Moscow political elite to adhere to compliance guidelines established by major arms control treaties. Notwithstanding many years of Russia's economic and political turmoil, ideological confusion and military decline, responsible behavior on arms control and non-proliferation commitments is one of the few but extremely valuable and potent cards available to retain the great power status, respect, and political influence of Russia in

the world. It is also an indispensable lever for securing Western cooperation on other matters important to Moscow: the situation in its “near abroad,” regional politics in Europe and Asia, and economic assistance and integration into world trade and finances.

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Contents

<i>Executive Summary</i>	<i>iii</i>
<i>Contents</i>	<i>vii</i>
<i>List of Abbreviations</i>	<i>xiii</i>
<i>Preface</i>	<i>xvii</i>
<i>Acknowledgments</i>	<i>xix</i>
<i>Foreword</i>	<i>xxi</i>
The START I and START II Treaties	
A. Arbatov	1
Anti-Ballistic Systems Limitation	
A. Pikaev, A. Menshikov, A. Arbatov	15
Controls on Substrategic Nuclear Weapons	
A. Amirov	29
Conventional Force Reduction in Europe	
A. Konovalov, S. Oznobistchev	37
The Elimination of Nuclear Munitions	
Yu. Pinchukov	51
Chemical Weapons Convention	
A. Kaliadine	63
Prohibition of Biological Weapons	
A. Kaliadine	75
Missile Technology Control Regime	
T. Farnasova	81
Naval Aspects of Arms Control	
B. Makeev	89

List of Abbreviations

ABM	Anti-Ballistic Missile
ACV	Armored Combat Vehicles
ALCM	Air-Launched Cruise Missile
APC	Armored Personnel Carrier
ASW	Anti-Submarine Warfare
ATBM	Anti-Tactical Ballistic Missile
BMD	Ballistic Missile Defense
BW	Biological Weapons
BWC	Biological Weapons Convention
C ³ I	Command, Control, Communications, and Intelligence
CFE	Conventional Forces in Europe
CIS	Commonwealth of Independent States
CSCE	Conference on Security and Cooperation in Europe
CW	Chemical Weapons
CWC	Chemical Weapons Convention
DPSS	Designated Permanent Storage Site
GLCM	Ground-Launched Cruise Missile
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IMEMO	Institute for World Economy and International Relations
INF	Intermediate-Range Nuclear Forces
IRBM	Intermediate-Range Ballistic Missile
ISCAN	Institute for the US and Canada Studies
km/sec	kilometers per second
LEU	Low Enriched Uranium
LOW	Launch On Warning
MBT	Main Battle Tank
MD	Military Districts
MID	Ministry of Foreign Affairs (Russia)
MINATOM	Ministry of Atomic Energy (Russia)
MIRV	Multiple Independently Targetable Reentry Vehicle
MT-LB	Multi-Purpose Lightly Armored Vehicle
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
NPT	Non-Proliferation Treaty

NTM	National Technical Means (of Verification)
R&D	Research and Development
RF	Russian Federation
SALT	Strategic Arms Limitation Talks
SCC	Standing Consultative Commission
SDI	Strategic Defense Initiative
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SNF	Short-Range Nuclear Forces
SOF	Strategic Offensive Forces
SRAM	Short-Range Attack Missile
SRF	Strategic Rocket Forces
SSBN	Nuclear-Powered Ballistic-Missile Submarine
SSN	Nuclear-Powered Attack Submarine
START	Strategic Arms Reduction Talks (Treaty)
SWU	Separative Work Units
THAAD	Theater High Altitude Area Defense
TLE	Treaty-Limited Equipment
TNW	Tactical Nuclear Weapons
U-235	Uranium-235
UN	United Nations
WMD	Weapons of Mass Destruction
WTO	Warsaw Treaty Organization

Preface

This is the third collaboration between the Henry L. Stimson Center and Alexei Arbatov's Center for Geopolitical and Military Forecasts. Our purpose in publishing this trilogy is to provide readers in the United States with insights into Russian strategic and arms control thinking.

Russia presents a confusing picture to western audiences, as one would expect from a country undergoing great change. Many different views now compete to define Russia's future. This report reflects an important perspective for westerners to hear—a liberal-democratic view, at times highly critical of the policies pursued by the Yeltsin government. Close readers of this report will be rewarded with a serious analysis of high quality with a refreshingly independent point of view.

It is important that readers not misconstrue the contents of this report which focus wholly on the negative, rather than on the many positive developments in Russia today. This project was designed to help the United States and Russia to resolve implementation and compliance problems that currently exist and to prevent prospective problems from occurring. As such, the Stimson Center specifically asked our Russian colleagues to focus on problems, not success stories. As a result, this report can be mischaracterized as a forecast of unrelieved doom for U.S.-Russian arms reduction efforts. To the contrary, some of the problems described in the essays that follow have already been resolved satisfactorily; many others may never arise.

It would be tragic to condemn the Russian quest to develop a civil society when this struggle continues to be waged by brave souls in difficult circumstances. If Washington gives up on Russia, it will surely increase the likelihood of unfortunate outcomes in Moscow. As this report clarifies, the circumstances surrounding Russian compliance problems are very different from Soviet compliance problems. They must not be treated in the same way, since a reprise of the blunt tactics used in Cold War compliance disputes could easily play into the hands of anti-democratic elements in Russia.

Nonetheless, the analysis in the pages that follow presents a cautionary tale to U.S. audiences concerned about Russian compliance and implementation of arms control agreements. In the authors' view, there are many factors contributing to concerns over compliance. These factors vary from case to case. The complexity of the problem makes simple or rhetorical solutions particularly inappropriate, whether from Moscow or Washington. A close reading of the text clarifies the need for people of good will in Russia and the United States to work closely together to iron out compliance and implementation problems, current or prospective.

The publication of this report was made possible by grant support from The John D. and Catherine T. MacArthur Foundation. The Stimson Center's thanks go to Kennette Benedict of The MacArthur Foundation for allowing the Stimson Center to continue its collaborative efforts with the Center on Geopolitical and Military Forecasts. Lisa Owens, Jill Junnola, Gwynne Oosterbaan, Jane Dorsey, Keir Lieber, and Barbara Diskind were instrumental in the preparation of the finished product. The Center for

Geopolitical and Military Forecasts, which bears sole responsibility for this report's substantive content, plans to publish it for Russian audiences.

Michael Krepon
President
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Our gratitude is extended also to a number of senior Russian officers of the Strategic Rocket Forces (SRF) Command and Main Research Institute, 12th Main Directorate of the Ministry of Defense and its Central Research Institute, as well as to officials from the Foreign Ministry and experts from “Vympel” Industrial Research Corporation. Their comprehensive data and assessments of the problems of implementation and potential compliance controversies for arms control and non-proliferation treaties were highly valuable.

We want to thank our colleagues from the Institute for World Economy and International Relations (IMEMO) and Institute for the US and Canada Studies (ISCAN) of the Russian Academy of Sciences for their cooperation in developing some of the ideas of this report as well as administrative staff of both institutes for organizational and technical support.

While the help of these individuals and institutions is greatly appreciated, their assistance should not necessarily be construed as an endorsement of the views expressed in this study, for which the authors bear full responsibility.

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Foreword

The breakup of the Soviet Union, like all historic events of such enormous magnitude, has produced highly complicated, confusing, and contradictory consequences. Great instability and unpredictability has ensued in international economic, political, security, and environmental affairs at global and regional levels.

Dramatic changes that started in April 1985 with Mikhail Gorbachev's "perestroika" have opened truly unprecedented opportunities for radical reduction and limitation of nuclear arsenals and conventional forces, for the curtailment of arms proliferation in the world, and for profound revision of confrontational relations between Russia and the West. This was manifested in unprecedented unilateral force reductions and program cancellations by both sides and in new agreements on radical arms cuts and cooperative measures between former "mortal rivals."

On the other hand, during the same period the disintegration of one of the two nuclear superpowers into a number of conflicting and unstable states, the disarray of its governmental structures, and the onset of economic crisis and domestic turmoil in the former USSR have created uncertainties and potential dangers which are hardly less important than the new opportunities.

One of the acute issues is the future of the Strategic Arms Reduction Treaties (START). Commitments of the Commonwealth of Independent States (CIS) on START I, accepted in Washington and Lisbon in May 1992, were encouraging. Still, the ability of CIS states to effectively cooperate on this matter is being severely tested, which affects the prospects of START II ratification and implementation.

Splitting the property of the Soviet Union among fifteen new republics—as painful and damaging as it is in relation to the economy and finances, infrastructure and resources, cultural values and communications—has qualitatively different and much more threatening dimensions when applied to nuclear weapons and their support and production network.

The manner in which this problem is resolved will affect the safety of nuclear arms maintenance (including environmental hazards), the robustness of their command and control systems, and the integrity of Russia's strategic posture and its effect on strategic stability. Nuclear postures and attitudes toward nuclear arms control in Britain, France, and China will be strongly affected by CIS nuclear solutions.

Even more important, this will have great consequences for the nuclear non-proliferation regime in the world at large. After the end of the Cold War, the proliferation of nuclear weapons and their delivery vehicles, in particular long-range ballistic missiles, has superseded the superpowers' strategic confrontation as the major concern of experts and the public alike.

In this respect, there are reasons for serious concern about the vast nuclear energy and nuclear weapons production infrastructure, storage, dismantling, and utilization facilities of the former Soviet Union. Leakage of nuclear technology and materials as well as accident hazards at transportation pipeline and storage sites threaten both the

Non-Proliferation Treaty (NPT) regime and commitments on the partial elimination of strategic and tactical nuclear weapons.

The Chemical Weapons Convention (CWC) has also, though for different reasons, encountered huge uncertainties. The allocation of conventional weapons among CIS states and the Russian revision of its defense requirements after the 1992 ratification of the Conventional Forces in Europe (CFE) Treaty have also created problems for CWC implementation. Moreover, severe economic crisis and disintegration of centralized governmental control over nuclear, conventional, and dual purpose exports may endanger the general non-proliferation regime and its efforts in the world at large. Another substantial factor is the ongoing conservative and nationalist shift in public moods and positions of political elites in Russia, which may hamper the implementation of arms control treaties and further cooperative security arrangements with the West.

The problem of compliance with the existing arms control regime is the crucial element of the much broader challenge of security and stability in the post-Cold War world, prone to conflicts and the proliferation of weapons of mass destruction. But hardly any other problem would be so crucial for international security in the 1990s as the adaptation of post-Soviet states, including Russia, into the framework of civilized relationships, conflict resolution, and arms control regimes.

Ensuring arms control compliance of post-Soviet states presents the West, particularly the United States, with serious dilemmas and hard choices. Ignoring non-compliance or making concessions on proposed revisions of various treaty provisions may encourage aggressive encroachment by some states, political groups, and institutions on the arms control regime and precipitate its collapse with great damage to world security. On the other hand, a universally tough stance on every issue and rejection of all Moscow's suggestions to take into account qualitatively new circumstances may undercut Russian domestic support of still weak and vulnerable post-Soviet democracies. A lack of Western flexibility may backfire due to the growing impact of nationalist and militarist factions and social groups on Russian domestic politics, leading to the same final result for the arms control regime and security.

A comprehensive review of a number of the most important compliance issues, undertaken by the authors of this study, concludes that there is no universal standard way or model for dealing with this complex and variable problem. The reasons for non-compliance (or the threat of it) may be different in each particular case. There are five main factors contributing to compliance problems:

- (1) the disintegration of the USSR and controversies among successor states;
- (2) the economic crisis and the lack of financial or technological resources in the CIS;
- (3) the disintegration of centralized political control over state and private organizations with vested interests in violating international agreements;
- (4) the active domestic political opposition to treaty implementation and compliance; and
- (5) the development of new threat perceptions and defense requirements that put into question the compatibility of compliance with national interests.

In each case of actual or potential non-compliance, different reasons or combinations of reasons operate which warrant different policy responses on the part of the United States and other parties to particular treaties.

In this study the essence of the problem is analyzed in its technical, strategic, political, and legal dimensions. The compliance motives and capabilities of various states and institutions involved are assessed. Alternative options for sorting out the emerging issues are reviewed. Additionally, the role of U.S. policy and its potential effects are the subject of special attention.

In addition to unclassified literature and official documents, the authors have drawn extensively on their personal experience and the insights of a number of senior Russian military officers as well as on information from officials of the Foreign Ministry, Security Council, defense industry, and construction bureau experts. Although the information, comments, and advice of the above experts and institutions was of great value, the views and proposals presented in this study are the full responsibility of the editor and authors.

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The START I and START II Treaties

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The disintegration of the USSR and controversies among the successor states over the legacy of Soviet nuclear weapons and treaty obligations have caused serious problems for the implementation of Strategic Arms Reduction Treaty (START) I, which was signed in July 1991 by the United States and the Soviet Union and properly ratified by the two parties in 1992. The START II Treaty, signed by the United States and Russia in January 1993, has not been yet ratified by either party. Hence, from a formal point of view, it should not be either a subject of compliance analysis or a matter of discord between Russia and other former Soviet republics.

Nevertheless, START II cannot be left out of this report. The two treaties are deeply intertwined in their general logic, established definitions, counting rules, verification and inspection systems, elimination and conversion procedures, etc. Essentially, START II may be considered an additional protocol to START I, fixing lower ceilings and subceilings on strategic offensive forces (SOF), placing more stringent qualitative limitations, and partially changing counting rules. The two treaties are also linked by their time-frames: the second may enter into force no earlier than the first. Moreover, the two treaties have overlapping implementation periods and START I will stay in force until START II is in force. Finally, START II's faster schedule of reductions and more radical limitations on some systems cannot help but affect Russian nuclear controversies with Ukraine and potentially with other republics while affecting the interpretation and implementation of START I and the Lisbon Protocol.

One additional consideration is that the cost of implementing START II in combination with strong Russian domestic opposition to this treaty may affect its implementation when and if it is formally ratified.

The Interaction Between the Two Treaties

The interaction of these major strategic arms treaties has already been analyzed in detail in other studies, and only a brief review is given here. The fact that the START II Treaty was signed even before the previous one had come into full legal force and before its implementation started is a unique event in international practice. This is explained by the momentous changes that took place in 1991-92 and the impact of the new security requirements of the post-Cold War era.

In accordance with the START I Treaty, the two parties assumed the obligation to reduce the aggregate number of warheads on each side to 6,000 units over a period of seven years, according to agreed counting rules. The actual downloading, however, will be to about 8,000 for the United States and 7,000 for the USSR. The treaty stipulated that the number of delivery vehicles would be reduced to 1,600. START II provides for reductions to 3,800-4,250 warheads over the same period (the first phase), but by the actual force loadings since all armaments of heavy bombers are now subject to the counting rules. In the second phase of the START II Treaty, by January 1, 2003, the aggregate ceiling on warheads is to be lowered to 3,000-3,500. Additional limitations on

delivery vehicles are not established. On the other hand, START II provides for more radical measures applied to specific weapon systems: in the first phase (until the year 2000) all Multiple Independently Targetable Reentry Vehicles (MIRVed) Intercontinental Ballistic Missiles (ICBMs) are limited by a subceiling of 1,200 warheads. No more than 650 of these may be deployed on heavy missiles. In the second phase (until the year 2003, or earlier) all ICBMs with multiple warheads are to be eliminated, and after that, only single-warhead land-based missiles may be retained.

START I did not limit sea-based missiles in any direct way. START II, in contrast to its limitations on ICBMs, does not prohibit MIRVed Submarine-Launched Ballistic Missiles (SLBMs), but in the first phase the aggregate number of warheads on sea-based missiles is limited to 2,160 and in the second phase to a 1,700-1,750 subceiling. As has already been noted, an important innovation in the START II Treaty affects the aviation component of the triads. Heavy bomber weapons are now counted according to their actual loading.

Still, START II would be impossible without START I, which provides for procedures to eliminate missiles, launchers, submarines, and heavy bombers. START I also provides for inspection procedures and extensive verification measures, including permanent monitoring of the perimeters of some production facilities, the exhibition of delivery vehicles and the number of their warheads, challenge inspections at strategic bases on short notice, and the prohibition on the encryption of telemetric information during the testing of ballistic missiles. The START II Treaty introduces a number of changes and additions, particularly with respect to the rules for the modification of missiles, launchers, and bombers.

The relationship between the START I and START II treaties, both of which will be simultaneously in force and implemented until the year 2000, is an important consideration for compliance monitoring. The rule was established that START I stipulations remain in force except where superseded or modified by START II. Nonetheless, much in START I remains in force. For example, the limitation on long-range Sea-Launched Cruise Missiles (SLCMs) to the 880 level has been maintained (although, in accordance with unilateral initiatives taken by the two sides in the Autumn of 1991, these weapons, as well as all naval tactical nuclear weapons, are to be taken out of operational service and put in storage ashore).

START II provides for broader freedom for using a relatively new, less complicated, less expensive disarmament measure. This measure reduces the amount of warheads not exclusively by eliminating the missiles and launchers, but also by downloading MIRVed missiles, removing some warheads from their nosecones. However, the right to download does not apply to heavy ICBMs and not more than four warheads may be removed from each downloaded missile. For one type of ICBMs the number of warheads that could be removed without changing the type of the "bus" was increased from four to five. The relaxation of these limitations enables the Russian side to download 105 of the SS-19 missiles from six to one warhead, thus turning them into single-warhead missiles. Also for the purpose of lowering the cost of implementing the new treaty, 90 Russian heavy ICBM silos are permitted to be modified for light single-warhead missiles.

Given the above factors, the potential problems of compliance, in order of priority, are nuclear controversies with Soviet successor states, the expected cost of reductions, and domestic opposition to START II. These issues are addressed in greater detail below.

A more general, but important problem may be envisioned in connection with delays in START I's entry into force and START II ratification. According to START I provisions, Russia is obligated to reduce its forces in three stages within seven years after ratification. During 1991–1994, however, the decommissioning of obsolete weapons in Russia and in other states of the former Soviet Union has proceeded at higher levels than those required under the first stage of START I reductions. In contrast, the START II Treaty obligates Russia and the United States to reduce forces by a certain date, regardless of when this treaty is ratified and enters into force. During the first stage of START II reductions, forces must be reduced to fixed levels (including 4,250 aggregate warheads and 1,200 warheads on MIRVed ICBMs) by the year 2000. Since ratification has been delayed, the time available for such reductions has shrunk. This will add to the technical and economic problems arising from dismantlement and destruction procedures, if and when both treaties formally enter into force. If this process begins in 1995, only five years instead of seven, as formerly expected, would be left to accomplish arms cuts.

Moreover, if the first seven-year stage of START II reductions is shifted into the future, but the end date of reductions remains the same (January 1, 2003), then the time available for the second stage of reductions will be compressed from two-and-one-half years to one year only. During this brief time Russia will have to eliminate 1,200 MIRVed ICBMs warheads, 650 heavy ICBM warheads, and 410 SLBM warheads—a task entailing considerable difficulties. Thus, implementing START II reductions might require additional agreements on schedules, procedures, and levels of reduction.

Sorting Out the Soviet Nuclear Legacy

The SOR installations of the former USSR are located in Russia (the only internationally recognized successor state to the USSR with a nuclear status), as well as in the former Soviet territories of Belarus, Kazakhstan, and Ukraine. A considerable part of these forces—about one-quarter of the ICBMs, one-third of the warheads for ICBMs, and more than three-quarters of the armament of heavy bombers—are deployed outside Russia.

The creation of the Commonwealth of Independent States (CIS) in place of the USSR in December 1991 at first raised hopes for the cooperative and orderly transformation of the Soviet empire into a new community of states. These hopes extended to maintaining the integrity and safety of the nuclear arsenal. But during the following two years, nuclear weapons turned into one of the major subjects of discord in the CIS, with dire international and arms control implications.

After numerous unsuccessful attempts to sort out nuclear issues at CIS sessions, the leaders of the four states and of the United States signed a Protocol to START I in Lisbon on May 23, 1992. The Lisbon Protocol committed CIS states to “make such arrangements among themselves as are required to implement the Treaty’s limits and restrictions; to allow functioning of the verification provisions of the Treaty . . . and to allocate costs.” In addition, Ukraine, Kazakhstan, and Belarus presented official letters

to the U.S. president promising to adhere to the nuclear Non-Proliferation Treaty (NPT) and to guarantee the elimination of nuclear weapons on their soil.

In spite of the general political significance of these commitments, from the legal point of view, the Protocol created some new uncertainties. The dates of joining the NPT were not specified and some additional reservations were made (for instance, Kiev's demand that "nuclear charge components" are not used for new production of weapons, which was irrelevant to START I and unverifiable). Moreover, the missile elimination date in Ukraine was tied to the seven-year treaty implementation period, making a previous commitment to do it by the end of 1994 moot.

The positions of the republics on arms control have evolved in quite different ways. On November 4, 1992, the Supreme Soviet of the Russian Federation (RF) ratified the START I Treaty. At the same time, a resolution adopted by the Supreme Soviet specified that the START I instruments of ratification were to be exchanged only after Belarus, Kazakhstan, and Ukraine had adhered to the NPT and had signed an accord with Russia to this effect.

By the two initial CIS agreements, Belarus was committed to the elimination of its 54 new road-mobile SS-25 missiles (in 1993 their number reached 81), but by an unspecified date and with no relation to START II. In Lisbon, Belarus promised to allow the withdrawal of missiles on its territory to Russia within the START I framework, although elimination of these missiles was not required by the terms of either START I or START II. On February 4, 1993, the Supreme Soviet of Belarus decided to ratify the START I Treaty and the Lisbon Protocol and to adhere as a non-nuclear weapon state to the NPT. In July 1992 and July 1993, Belarus and Russia signed agreements on control, maintenance, and withdrawal of ICBMs. With the final technical issues settled, the actual withdrawal of missiles from Belarus started in September 1993. One missile division (27 ICBMs) was redeployed to Russia in early 1994.

Kazakhstan initially refused to eliminate 104 heavy SS-18 ICBMs (1,040 warheads) on its soil and did not commit to denuclearization under the CIS agreements. In May 1992 Kazakh President Nazarbayev changed course and promised to eliminate all the missiles within seven years of implementation (about the year 2000), as confirmed by the Lisbon Protocol. He went even further by suggesting that Almaty would not object if the missiles on its territory overtly stayed under Russian control. The elimination of all of those missiles was not required by either START I or the first phase of START II (which allowed retention of 65 out of 104 SS-18s), but was envisioned by its second stage.

In May 1992 Kazakhstan signed a treaty on collective security with Russia and four other republics, accepting Russian security guarantees and the "nuclear umbrella," although formally Russia did not have nuclear weapons in its disposal since all strategic weapons at that time belonged not to Russia but to CIS combined forces according to the initial Alma-Ata-Minsk Agreements. Neither Ukraine nor Belarus joined the collective security treaty at that time. Finally, in early 1993 Kazakhstan ratified the START I Treaty of which the Lisbon Protocol is an integral part, and in late 1993 it joined the NPT as a non-nuclear weapon state. In respect to the command and control of the strategic nuclear forces located on its territory, the position of Kazakhstan is close to that of Belarus. In

December 1993 Kazakhstan signed a memorandum of understanding with Russia on the schedule of the withdrawal of nuclear warheads to Russia and the elimination of ICBMs.

Yet there is evidence that the Kazakh government and military command maintain close control over the missile bases, which has affected the safety and maintenance of their nuclear weapons. The number of nuclear warheads in base storage at Derzhavinsk and Zhanghiz-Tobe is twice the permitted allowance. Moreover, fire-extinguishing systems do not work; guard-alarm circuits are cut off from electric supply; and Kazakh authorities are prohibiting the withdrawal of warheads and their nonfunctioning parts as well as delivery of spare parts and equipment for repair work.

Of all three smaller republics, Ukraine poses the greatest problems. It is the only one, which, if strongly motivated to override the attendant economic and political costs, would probably be capable of resubordinating and supporting at least some of the ICBMs it inherited from the break-up of the Soviet Union for a number of years. Ukraine can do so because it has sufficient economic resources, partial SOF and command-control systems production and maintenance infrastructure, technical and military cadres, and electronics and programming centers. One available option might also be to modify ICBM nuclear warheads for employment as gravity bombs deliverable by aircraft. Towards such ends, Kiev established administrative control over the two missile divisions in Pervomaysk and Khmelnytskyi by presidential decree in April 1992. However, Ukraine lacks operational control over these missiles, and it does not have the ability to retarget, put on higher alert, and launch ICBMs.

In any case, the very process of the acquisition of operational control over nuclear weapons by Ukraine might provoke high political tensions with Russia and other nations, and even erupt into military conflict with unpredictable consequences. It is obvious that such developments would undercut any prospect of START I and START II implementation and deal a heavy blow to the non-proliferation regime. Already, the present uncertain and confusing situation has become a great obstacle to the implementation of START I and the ratification of START II.

Ukraine agreed to eliminate its 130 older SS-19 missiles under START I provisions. The remaining 46 newer SS-24 silo-based ICBMs were to be eliminated by the end of 1994, according to Kiev's commitment in the Alma-Ata-Minsk Agreements of December 1991. After many conflicting declarations this commitment was reconfirmed by President Kravchuk during his visit to the United States in May 1992. In the Lisbon Protocol, however, elimination of missiles was linked to the seven-year START I implementation period. The START II Treaty of January 1993 implied elimination of all MIRVed ICBMs, including those deployed in Ukraine. Kiev, however, was not a party to the treaty, was not consulted during negotiations, and declined to be bound by it.

The most serious disagreements between the Russian Federation and Ukraine arose on the question of the status and order of the elimination of the 176 ICBMs of the 43d Missile Army with two missile divisions, carrying 1,240 nuclear warheads and deployed in silos near Khmelnytskyi and Pervomaysk, and the 43 heavy bombers of the 46th Air Army, equipped for nuclear air-launched cruise missiles (about 390 ALCMs in airfield storage) based in Priluki and Usine.

Ukraine leaders have repeatedly stated that it was the aim of the republic to become a non-nuclear state, to ratify the START I Treaty, and to adhere to the NPT. But ratification became linked to many conditions. Some of these conditions were not unreasonable (security guarantees, financial compensation), yet others clashed with the articles of the Lisbon Protocol and the officially stated aim of acquiring non-nuclear status. In November 1993 the Ukrainian Parliament ratified START I and all but Article V (NPT adherence) of the Lisbon Protocol. Ukraine declared all nuclear weapons on its territory as its own property. Accordingly, only 36 percent of the launchers and 42 percent of the warheads were to be eliminated under START I, in exchange for financial compensation of \$1.6 billion-\$1.7 billion.

Meanwhile, the maintenance and safety of nuclear weapons in Ukraine have degraded, in particular that of SS-19 ICBMs, some of which are beyond service life. In April and September 1993, Moscow and Kiev signed agreements on maintenance, service, dismantlement, and withdrawal of warheads and missiles, but, on each occasion, controversies between the two states hampered their cooperation on nuclear weapons elimination.

Finally, at a trilateral U.S.-Russian-Ukrainian summit in January 1994, after strong political pressure and introduction of serious economic incentives, Kiev agreed to sign yet another agreement. Under it, the first 200 warheads of SS-24 missiles (out of 460 of this type) would be transferred to Russia for dismantlement and utilization during a ten-month period, with the rest to be transferred as soon as possible after that. As compensation, Ukraine would receive 100 nuclear fuel rods for atomic power plants from Russia, U.S. financial assistance, and rather vague security guarantees similar to those provided to non-nuclear states within the NPT. In February 1994, the first two trains with 60 warheads left Ukraine for Russia. About 40 SS-19 and 20 SS-24 missiles were eliminated or prepared for dismantlement.

Simultaneously, the Ukrainian Rada ratified START I and the Lisbon Protocol, including the commitment to join the NPT. However, the nuclear question is only one element of Russian-Ukrainian relations, which are complicated by controversies and mutual suspicions. In a general sense Russia bears predominant responsibility for the lack of trust and cooperation in relations between the two republics. Russia's dubious position on Crimea, its mismanagement of the CIS Unified Armed Forces and Joint Strategic Forces, its failure to live up to its commitments to consult with other republics on security and arms control policies—commitments embodied in the Alma-Ata and Minsk CIS agreements in December 1991—and its general arrogant attitude towards new republics have fueled the activities of local nationalists within Russia and exacerbated uncooperative behavior of Ukrainian authorities.

Hence, further difficulties may arise in implementing the trilateral agreement of January 1994 and the two START treaties if there are new tensions between the two states on Crimea or on economic or political issues—such as concrete forms of Ukrainian participation in the “Partnership for Peace” program. Additionally, the two START treaties provide for different schedules of armaments reduction. Moreover, a large number of organizational, technical, and financial problems may lead to compliance issues, in particular the elimination and conversion provisions of START I and START II. The status, verification, and elimination procedures may, in and of themselves, become

sources of contention within the CIS and the object of political intrigues and provocations by nationalistic elements.

The Russian Supreme Soviet linked implementation of the START treaties to the adherence of the other CIS republics, particularly Ukraine, to the NPT. Even under the best circumstances, the elimination of nuclear weapons in Ukraine would take several years. During this time, Kiev intends to maintain full administrative control over the nuclear weapons on its territory, which is hardly compatible with the NPT. Joining the treaty as a non-nuclear state might require resubordination of the weapons, infrastructure, and personnel back to Russia or the redeployment of Russian troops to Ukraine. Such an arrangement would prove to be financially difficult for Russia and politically difficult for Ukraine. Otherwise, Moscow may delay the implementation of START I and the ratification of START II, consequently creating uncertainty in the arms control regime and a high probability of misunderstanding with the United States on compliance with the reduction schedules.

A different problem with compliance might occur if the new Russian Duma, elected in December 1993, decides to ratify START II and proceed with implementation regardless of the Ukrainian position. An attempt to eliminate the missiles without Kiev's permission would lead to a direct clash between Russian and Ukrainian personnel with dire technical, military, and political consequences. Alternatively, implementation of the START II Treaty only with respect to the weapons in Russia would create problems with adhering to the treaty's scheduled reductions, ceilings, and subceilings since the MIRVed missiles and bombers in Ukraine would not be taken in account by Moscow while still formally staying under its operational control and claimed as Russian property.

Another contentious issue that may emerge relates to the heavy bombers at Ukrainian airfields. Since they were resubordinated to the Ukrainian Air Force and since Kiev is mute about its nuclear status, those airplanes should be considered as converted for non-nuclear missions. Then specific notification and conversion procedures are to be followed and bomber nuclear weapons are to be transported to storage sites not closer than 100 km from airfields. If Ukrainian personnel carry out these obligations, Kiev's commitment to the NPT would be undercut. If these obligations are not met, it would violate START II.

If, as a result of a new crisis in relations with Russia, Ukraine decided to acquire the status of a nuclear weapon state and completely resubordinate the remaining missiles and bomber weapons to its national command, the START I and START II treaties would not survive and the problem of compliance would become irrelevant. The role of U.S. policy may be crucial in preventing this dire outcome.

The Cost of Strategic Force Reductions

Under the two treaties, deep cuts in strategic forces would require (until the year 2005) the transportation or elimination of about 2,000 land- and sea-based missiles, 500 silos, 37 submarines, and 65 bombers, as well as the storage of thousands of warheads and highly toxic liquid missile fuel. Cost estimates are quite different for Russia and the United States since they have different strategic forces and modernization programs that will be affected asymmetrically by START II. Also, U.S. and Russian industrial contracting systems and financial accounting methods are hard to compare.

According to preliminary estimates, direct cost of START reductions to Russia will amount to approximately 90-95 billion rubles (in 1992 prices). Of these expenditures, 75-80 billion rubles would cover the implementation of cuts and limitations under START I (including 35-40 billion rubles through 1997). Regardless of the treaties, Russia would have to eliminate more than 60 percent of the presently deployed ICBMs and 50 percent of the Nuclear-Powered Ballistic-Missile Submarines (SSBNs) during the 1990s in view of their physical obsolescence.

Within the framework of START I, and in the absence of START II, the replacement of obsolescent strategic forces by a follow-on generation would be extremely difficult for Russia to finance. Huge additional appropriations would be needed in view of the breakdown of military-industrial cooperation among former Soviet republics. Taking into account the deep economic crisis in Russia and the other republics, a huge budget deficit, and urgent needs for military reform and conversion, it would be virtually beyond Russian capabilities to keep up to START I ceilings and not to go down unilaterally in its strategic force levels.

The deep cuts envisaged by the START II Treaty, however, remove the need for massive replacement of old weapon systems. The aggregate savings from smaller strategic modernization programs would amount to about 100-105 billion rubles over the next ten years. An additional savings of 15 billion rubles (1992 prices) over the same period will result from the smaller force and its maintenance stipulated by START II. Taking into account that a large part of these expenditures on START II implementation would have been incurred anyway—because of obsolescence and START I—the net savings under START II might be as high as 135 billion rubles during the next decade (in 1992 prices). Of course, this figure is based on many assumptions subject to disagreements. For instance, outlays for modernization might be much lower even without START II. On the other hand, rapid force reductions required by the schedule and elimination procedures of the treaties will require some additional appropriations. The flexibility in restructuring forces would be restricted by START II as well, thus ensuring additional expenditures.

In this regard, the ban on MIRVed ICBMs in combination with the aggregate levels and sublevels established by START II on warheads creates the most difficult problem for Russia. Russia will have to eliminate the overwhelming and most modern portion of its principal component: land-based multi-warhead ICBMs. Compared to early 1993 levels, the treaty reduces Russian forces in being altogether by five times in terms of delivery vehicles and by twenty times in terms of warheads. Hence, START II has created the prospect of a huge “breach” in the structure of Russian strategic forces in the place traditionally occupied by the ground-based MIRVed missiles. It would hardly be possible to close this breach by expanding the sea- or air-based legs of the Triad. These forces are largely obsolete, their modernization is uncertain, and the maintenance cost per deliverable warhead is two to three times higher for SLBMs, and about ten times higher for heavy bombers, than for silo-based MIRVed ICBMs.

This confronts Moscow with a hard choice: to undertake a radical restructuring of the Triad and adopt a new structure similar to that of the United States, or to maintain its traditional reliance on ground-launched ICBMs. The first option, more attractive from an economic point of view, would go against the accepted Russian strategic concepts, operational plans, and capabilities of command and control systems. The second option

might imply the deployment of about 900-1,000 single-warhead ICBMs in place of the eliminated MIRVed missiles. This would stretch Russian economic capacity to the maximum. Other programs (like SLBM modernization) might be sacrificed under this option. Besides, sufficient money should be invested in the early-warning, command and control and communication systems. These expenditures would be broadly perceived in Russia as competing with the costs of the START treaties' implementation. In effect, the costly restructuring of Russian forces would be tied to arms control provisions.

It is possible to anticipate that the shortage of outlays would be a permanent problem to implementing the treaties on schedule. Because the treaties' implementation has already been delayed, only two instead of three years are left for the implementation of the second stage of START I. Further delay would certainly prompt the Russian side to raise the question of revision of the fixed schedule.

Economic problems may lead to Russian deviations from START II provisions on schedules and procedures of elimination and conversion of strategic arms. These deviations would especially affect the area of heavy missiles and the conversion of their silos into light missile silos, as required in the treaty's Protocol and in Articles I and II. Additionally, the limitation on the number of heavy missile silos (90) that may be converted for light ICBMs could turn into a serious compliance issue. Apparently, Russia is planning to deploy 300-400 new missiles in silos. On Russian territory there are 204 heavy missile silos that could be hardened and converted to accept the SS-25 follow-on system. But since only 90 may be converted, it would be necessary to build 200-300 new silos, thus cutting in half Russia's potential savings from economy-oriented provisions of the treaty (i.e., relaxation of downloading and bomber conversion rules). Using other than heavy missile silos would not provide the desired hardening in view of the U.S. intention to retain about 900 hard-target killing warheads of the W-87 type (to be transferred from Peacekeeper/MX to Minuteman III ICBMs while downloading them from three to one warhead) and of the W-88 type on Trident II SLBMs.

In the present political circumstances, and especially after signing START II, U.S. plans for retaining effective counterforce capability against residual Russian strategic forces are hard to justify. Besides providing ammunition to the opponents of START II in Russia, this stance would impose additional expenditures on Russia, inducing it to build more hardened silos and command centers than otherwise would be the case. Expanding mobile-basing would lead to still greater expenditures, and besides, the above high-yield counterforce warheads are considered a threat to mobile ICBM deployment areas.

Yet another potentially contentious issue may involve the prohibition on changing the number of declared warheads on particular missile systems. There are 170 SS-19 and 46 mobile and fixed SS-24 ICBMs in Russia, of which only 105 SS-19 missiles may be downloaded to one warhead according to the treaty. The obligation to eliminate the rest of these missiles would require production and deployment of 111 new single-warhead ICBMs with new warheads for the same force level. While Russian downloading creates greater possibility of a future break-out through reverse uploading, the same holds true for the United States with respect to its Minuteman III and Trident missiles. Since U.S. uploading capabilities are greater, Washington should not be concerned about Russia's potential up-loading.

Another hypothetical compliance issue concerns warhead counting rules. Budget constraints will be pushing Russian strategic programming in the direction of developing a common missile system for sea-based and land-based (fixed and mobile) deployment modes. The Navy would most probably want a new missile with intercontinental range and MIRVed payload to compensate for the small number of ballistic missile submarines it holds and the alleged vulnerability of these submarines to U.S. anti-submarine warfare capabilities. Hence, its ICBM version might fall under suspicion as a strictly single-warhead missile. This issue could arise with respect to a future substitute for the follow-on to the SS-25 Topol ICBM and to the SLBM for a new SSBN class, to be deployed after the years 2003–2005. Missile testing would have to start during the time-frame of the START II Treaty.

Russian Domestic Opposition

In Russia, START I was ratified on November 4, 1992. During the debates on ratification, the presidents of Russia and the United States signed a framework agreement on even more radical cuts in strategic forces, which were later embodied in the START II Treaty. The Russian deputies' attention and criticism shifted from START I to the newer U.S.–Russian agreement. As a result, the START I Treaty had a relatively easy passage through the Russian parliament. A Supreme Soviet resolution issued in connection with the ratification of START I stipulated conditions for its entry into force and implementation. As mentioned above, growing controversies in Russian–Ukrainian relations and Kiev's objections to ratification of START I, the Lisbon Protocol, and the NPT created a big obstacle to the ratification of START II. Other obstacles to treaty ratification arose as well.

Serious opposition to START II has been mounted in the Russian Supreme Soviet since the end of 1992 by leading figures of the parliamentary bloc "Russian Unity" and a number of centrist fractions. Obviously, against a background of growing confrontation between the powers of the Legislature and the Executive, opposition to the treaty in the Russian parliament was not only inspired by its substance but also by the outright rejection of the internal and foreign policies of the President of the Russian Federation. Intransigent opponents of the treaty created a large advisory committee of conservative defense industrial managers, technical experts, and retired military officers to elaborate arguments against START II. The committee's major points were as follows.

First, START II envisions the restructuring of Russian forces along the lines of the U.S. Triad, which runs against geostrategic and technical peculiarities of the Soviet and Russian strategic posture. Silo-based MIRVed ICBMs are the most stabilizing retaliatory weapon system since their launch may be detected by early-warning systems within minutes and flight time of 30–50 minutes allows launch on warning (LOW) response of the other side. In contrast, SLBMs launched from adjacent seas with short flight time effectively deny this capability.

Second, START II contains a dubious commitment with respect to the Anti-Ballistic Missile (ABM) Treaty, referring simultaneously to the joint declaration on global anti-missile defense. In the future, the United States may resume a massive ballistic missile defense program, relying on the technical legacy of the Strategic Defense Initiative (SDI), while Russia for economic reasons will not be able to follow suit. Traditionally, the most

effective ABM penetration system for the Russians, heavy SS-18 ICBMs, would be eliminated.

Third, reductions are to be implemented in the United States largely by downloading its missiles and bombers, while Russian implementation obligations eliminate Russian ICBMs, primarily of the heavy type. U.S. downloaded Trident I, Trident II, Minuteman III warheads, and Peacekeeper ICBMs will be put in storage instead of being dismantled and eliminated. Russian warheads are to be dismantled and utilized with U.S. help. If Russia is to eliminate its warheads, it should do so on its own and on a reciprocal basis with the United States eliminating its downloaded warheads under mutual control.

The dominant position in the Supreme Soviet was to reject START II, and moreover, to abandon START II by the year 2003 in accordance with the treaty's withdrawal terms in order to procure and deploy a new generation of heavy ICBMs. Despite the disintegration of industrial cooperation with Ukraine, some factions in the Supreme Soviet believed that ten years would be enough to organize the development, testing, and production of SS-18 follow-on missiles by concentrating Russian resources on this weapon system.

After the October 1993 crisis, the old Supreme Soviet ceased to exist. A major realignment of political groups started in Russia, and this process will greatly affect the position of the new parliament on START II ratification. In the newly elected Federal Assembly, communists (together with pro-communist factions) and nationalists have a safe majority. However, the new parliament is not so confrontational towards the president, and its professional level is much higher than its predecessor. Moreover, communists are not homogeneous and are not always united with nationalists.

In the former Supreme Soviet, START II did not have any chances of ratification. In contrast, the new Federal Assembly would probably be less partisan or biased towards it. Nevertheless, the new parliament, if it considers the treaty for ratification, would put it under close scrutiny and the above objections would be given utmost attention. The growing nationalistic moods in mass media and within the military and public opinion at large, as a reaction to domestic economic failures, social disorder and what is perceived as foreign policy humiliations, would not make ratification easier.

Besides, some parts of the military and defense industry establishment, which may exert much larger general influence on presidential policies, will continue to oppose the treaty out of either economic or strategic considerations. They would be unlikely to oppose START II openly, but they would be able to counter it by taking a tough stance on the conditions of the deal with Ukraine or by encouraging various parliamentary amendments to START II ratification.

Much will depend on U.S. policies. The worst position the United States could take would be to passively wait, relying on President Yeltsin's influence and devotion to good relations with Washington. Joint U.S.-Russian parliamentary hearings might be very useful, if thoroughly prepared and properly attended. Inter-parliamentary cooperation (at first, at the committee level) on the ratification of the START II Treaty, together with other forms of cooperation (joint seminars, reports, and declarations) could significantly promote the process of working out a common approach to a strategic relationship between the United States and Russia.

Facilitating Implementation and Compliance

Three principal potential non-compliance factors may affect Russian implementation policies of the two strategic arms reduction treaties: discord among post-Soviet republics, economic problems, and domestic political and institutional opposition. These potential reasons for non-compliance should be taken into account by U.S. policy in advance to ensure the fulfillment of both treaties and avoid unnecessary additional tensions in U.S.-Russian relations.

As for the first factor, the best strategy would be to reach a package of political and arms control treaties, supplementing START I, START II, and the Lisbon Protocol, with full participation of the United States and the four former Soviet republics. In the political arena, the United States and Russia, instead of unilateral declarations, should sign a collective security treaty with Ukraine, Kazakhstan, and Belarus committing themselves to respect the sovereignty and territorial integrity of these states, and to oppose any unprovoked nuclear or conventional aggression against them. The concept of "Strategic Partnership," put forward by the United States and its NATO allies in October 1993, could serve as a framework for specific agreement among the five states with nuclear weapons on their territories, hopefully to be joined later by the other nuclear powers.

If the Russian government wants to resolve the nuclear issue, it should take a much stronger position against provocative activities and declarations of nationalists in the executive bodies, new parliament, and among public organizations. Any claims on Crimea or Sevastopol should be disavowed, and no separate relations with the newly elected leaders of Crimea should be promoted that in the slightest way may violate the Ukrainian constitution or put in doubt its authority over Crimea. U.S. policy should encourage this stance by Moscow.

As for the technical part of the solution, the main task now is to ensure the implementation of the January 1994 trilateral agreement among Russia, Ukraine, and the United States, and to negotiate the same kind of agreement among the United States, Russia, and Kazakhstan. The best way to safeguard the implementation of these agreements from the zigs and zags of political relations would be to make the deactivation of missiles and bombers outside Russia an element of a broader frame of measures, enveloping not only Ukrainian or Kazakh nuclear weapons but also those in Russia and in the United States. This would be a much more reliable alternative to numerous recent agreements that are just imposed on the smaller republics by means of political and economic pressure.

In particular, as a follow-on to the Lisbon accord and within the framework of START I and START II, it might be possible to reach an agreement on de-alerting and withdrawal of a part of strategic forces from operational service by way of removing all of the warheads from these forces. These warheads should be stored in central storage sites. Bomber weapons should also be relocated from airfield depots to central storage depots. Adequate verification and monitoring systems have to be established. The principal point is that these measures should apply not only to Ukraine and Kazakhstan but also to a significant portion of U.S. and Russian strategic forces earmarked for elimination under the START I and START II treaties. To ensure cooperation of the three smaller republics

of the former USSR, in contrast to negotiations on START II, they should participate from the very beginning in talks on these measures and gain economically and politically from their contribution to strategic arms reduction and de-alerting.

This kind of initiative should come from the United States, taking into account the present domestic political situation in Russia. U.S. efforts would be especially welcome since the START treaties are currently suspended in a dubious state, increasingly outrun by time, political events, and economic crises in Russia.

Economic and technical factors may be partly addressed by U.S. economic and technical assistance, but this part should not be overplayed and overestimated in relation to a third problem: domestic political and institutional opposition. Western economic assistance in dismantling should not substantiate the arguments of Russian START II opponents, i.e., that the treaty is so unequal and one-sidedly beneficial to the West and that the West is willing to pay off Russians for the "drastic degradation of its security."

Hence, of much greater value would be additional agreements, or unilateral U.S. initiatives that may alleviate the burden on the Russian economy and finances of dismantling and restructuring strategic forces. It is also crucial that such measures should apply to U.S. forces as well. In this sense, the above concept of bilaterally downloading a substantial part of the strategic forces to zero and taking them off alert under mutual monitoring is a promising avenue.

Apart from that, the United States could propose a number of amendments to revitalize the ratification and implementation of START II. One such amendment would permit the downloading to one warhead of more than 105 ICBMs (preferably all 216 SS-19s and SS-24s). A second would extend the quota on the conversion of heavy missile silos from 90 to all 204. And another would simplify the rules of conversion. (Since heavy ICBM production plants are left outside Russia, there is no threat of a break-out using existing silos, while initiating the production of these missiles in Russia would take so much time and resources that the silos would be a minor issue.) Furthermore, since there is no apparent need for a high counterforce capability, the United States might unilaterally remove and eliminate all W-87 and W-88 warheads, retaining smaller warheads that would not be perceived as a threat in Russia and would not require large expenditures on hardening, weapons numbers, and mobility.

This may look like an invitation for unilateral U.S. concessions, but its economic, strategic, and political advantages are now so great, and its gains in START II are so obvious, that the proposed actions would only slightly shift the ratio of concessions in the other direction. Indeed, it would be wiser on the part of the United States to opt for a slightly less advantageous treaty that is implemented than to stay with a great strategic victory, embodied in START II, that remains on paper only.

This strategy is the best way to address the problem of domestic conservative opposition in Russia, which in itself is largely the result of Moscow's former policy of unilateral concessions. Some of its arguments are quite serious, although exaggerated in their political importance. Expanding the U.S.-Russian security dialogue in line with the "Strategic Partnership" to address a number of mutual concerns would be a crucial step to deflect pressures against compliance. A desirable agenda may be quite extensive and would include such topics as lowering the alert rates of strategic forces and

introducing greater mutual transparency and interdependence in their maintenance and operations; reducing SSBN patrol rates; banning tests of SLBMs with depressed trajectories; and banning anti-satellite weapons. All of these steps would enhance integrity and survivability of command, control, communications, and intelligence (C3I) systems in conditions of reduced levels and relaxed postures of the two strategic forces.

It is quite a unique situation when implementation of and compliance with signed treaties depends on the success of follow-on steps. This does not mean that without formal agreements on all those issues, Russian compliance with the two START treaties will be in doubt. Rather, the expansion of the strategic dialogue between the two nations and U.S. initiatives to revitalize the progress of START implementation are needed to make strategic arms control more attractive within the present political environment in Moscow and less risky for the president and foreign minister as an issue on the national agenda.

If START II is ratified by both sides and the formal implementation of both treaties is started, the follow-on steps, supplemental agreements, and new unilateral commitments would greatly enhance the chances that potential non-compliance issues during the next decade would be resolved quickly, in a business-as-usual spirit and on a mutually satisfactory basis, without turning into major political subjects of discord.

During the September 1994 U.S.-Russian summit, the exchange of new initiatives gave hope for the enhancement of strategic arms reduction efforts by the two states. Initiatives discussed included moving to lower aggregate START II ceilings (3,000 instead of 3,500 warheads) and pursuing follow-on reductions under an envisioned START III Treaty, which might partly overlap with START II in time and provide for still further cuts (for instance, to 2,000-2,500 warheads). Together with some fixes of the schedules and procedures for START II implementation, hopefully this may revitalize strategic weapons reductions after a three-year period of stagnation, provided that the leaders of the two states supply consistent and strong guidance to follow through with their initiatives.

Anti-Ballistic Systems Limitation

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The U.S.-USSR Treaty on the Limitation of Anti-Ballistic Missile (ABM) Systems which was signed on May 26, 1972, and which entered into force on October 3, 1972, represents a unique bilateral arms control agreement. The ABM Treaty has survived more than 20 years of dramatic technological and political breakthroughs without any significant changes. This may be regarded as an achievement considering that the treaty has become an object of disagreement, resulting from its deficiencies and its incompatibility with certain military programs and political intentions of the Parties.

Several developments in recent years have greatly alleviated pressures on the ABM Treaty, which was in danger of crashing during the 1980s. Such developments include profound positive changes in relations between Russia and the West; the U.S. decision in the early 1990s to stop the Strategic Defense Initiative (SDI) program; U.S.-Russian treaties on deep reductions and restructuring of strategic offensive forces; cooperation agreements on dismantling nuclear weapons and using their material for peaceful, scientific, or commercial purposes.

Current trends, however, may raise new compliance issues for the ABM Treaty. These trends relate to the disintegration of the Soviet Union and the subsequent difficult transition period, worldwide proliferation of nuclear and chemical weapons, and ballistic missiles and missile technologies.

Key Provisions of the ABM Treaty

The ABM Treaty limits the deployment of anti-ballistic missiles and restricts their development. Specifically, it restricts the number and location of ABM systems or their components to two sites, with no more than 100 anti-ballistic missiles and missile launchers per site. The treaty and its attached documents also detail the numbers and characteristics of the ABM radar systems permitted. In 1974, the two Parties signed a Protocol to the treaty that further limits each side to one ABM deployment area only.

Article XIII of the treaty establishes a Standing Consultative Commission (SCC) to consider ambiguities or doubts about compliance. This body over the years has acquired substantial significance as an institution for strategic dialogue between the two states on a much broader range of issues in addition to ABM Treaty compliance. Most discussions on the U.S. SDI program and the Soviet Krasnoyarsk radar issue were held within the Commission during the 1980s, and this body may again come to the foreground of the U.S.-Russian strategic relationship in the 1990s.

Another important document that is an integral part of the ABM Treaty are the Agreed Statements, signed simultaneously by both parties in 1972. As Agreed Statement D states:

In order to insure fulfillment of the obligation not to deploy ABM systems and components except as provided in Article III of the Treaty, the Parties agree that in the event ABM systems based on

other physical principles and including components capable of substituting for ABM interceptor missiles, ABM launchers, or ABM radars are created in the future, specific limitations on such systems and their components would be subject to discussion in accordance with Article XIII and agreement in accordance with Article XIV of the treaty.

This point was at the pinnacle of major strategic disputes between the United States and the USSR for the whole decade of the 1980s. Rarely in history has so much depended, politically and strategically, upon the legal interpretation of a document as it did with Agreed Statement D. Finally a narrow interpretation was acknowledged as genuine by both sides, thus closing this potentially major issue of non-compliance, with dire implications for the strategic relations of the superpowers.

Global Protection Confusion

The disintegration of the USSR has led to a radical, although spontaneous, reevaluation of Moscow's entire security policy. Not surprisingly, the process has also affected the ABM Treaty which undoubtedly remains an important element in Russian strategic interests. As early as January 1992, a month after the formal dissolution of the Soviet Union, President Boris Yeltsin formulated Russia's official position towards compliance with the treaty in his speech addressed to the UN Security Council.

On the one hand, President Yeltsin declared his administration's intentions to comply with the ABM Treaty. On the other, he said that the time had come to consider creating a global system for the protection of the world community. Yeltsin did not specify details of the proposed system and said nothing that might be considered as a violation of the Treaty's letter. However, this statement could be interpreted as contradicting the basic obligation of the Parties not to deploy ABM systems in their territories or areas beyond very strict limits, fixed in Articles I, II, and III of the treaty.

The official Russian position, formulated in the presidential speech to the UN Security Council, was confirmed in the START II Treaty, signed by the presidents of the United States and Russia on January 3, 1993, in Moscow. The Preamble of Strategic Arms Reduction Treaty (START) II contains commitments of the Parties resulting from their obligations under the ABM Treaty as well as those from the U.S.-Russian Agreed Statement on Global Defense, signed on June 17, 1992. The Agreed Statement, like Yeltsin's Security Council speech, mentions the intention of both Russia and the United States to make coordinated efforts in order to move towards a non-specified system of global protection of the world community. The philosophy behind the statement cannot be considered fully compatible with the spirit of the ABM Treaty, although it does not directly imply its revision.

The endorsement of the term "global defense" by the Yeltsin government was evaluated by some in the United States as a dramatic change in Moscow's position and as an acceptance of the U.S. idea of transition from an offensive to a defensive dominated strategic environment. Thus, Ambassador David Smith, former head of the space group of the U.S. delegation to the bilateral nuclear and space talks in Geneva, wrote that after Yeltsin's speech to the Security Council Gorbachev's former anti-SDI campaign "seems

as anachronistic and distant as the thump of Khrushchev's shoe pounding against the UN table."

Despite these contradictions in Russia's position towards compliance with the ABM Treaty, they hardly can be viewed as a complete break with the traditional Soviet support for the treaty regime. The very presence of the reference to the ABM Treaty in the START II Preamble should be assessed as a positive step, albeit an insufficient one, compared with the text of the START I, signed by the Soviet president in July 1991, which contained no mention of the ABM Treaty.

Although the Agreed Statement and the ABM Treaty were referred to in the same part of the START II Preamble, the reference to the latter might be considered as more important. The ABM Treaty was ratified by the legislatures of the two powers and, therefore, is an arms control agreement in full legal force. The Agreed Statement is not an object of parliamentary ratification, and thus might be viewed as no more than just a declaration. Logically, any contradictions between the provisions of the ratified treaty and the declaratory statement should be resolved in favor of the former.

Russia's controversial attitude toward compliance with the ABM Treaty represents a new Russian paradigm that has caused numerous mishaps from 1992 to the present. Much more than in the case of the former Soviet Union, the controversial official policies in Russia have been fed by interagency competition and fueled by the institutional ambitions and inadequacies of the decision-making mechanism, resulting in an almost complete loss of civilian control over the armed forces and defense industries.

Thus, certain provisions of the START II Preamble became objects of different interpretations by top Russian officials. Clearly, these officials were expressing the views of the agencies that they represented. The most restricted interpretation came from the Ministry of Defense. The significantly reduced expenditures of governmental military contracts aggravated competition between the various armed services. This is why most representatives of the Ministry of Defense are worried about the possibility of a new, large-scale military program, which would further reduce their scarce available resources. They were supported by the Chief of the General Staff, Army General Mikhail Kolesnikov, who commented on the START II Treaty in the following way: "It is . . . important to emphasize that the implementation by Russia of radical cuts in strategic offensive weapons is based—and this is reflected in the new treaty—on due consideration of the parties' obligations under the existing ABM Treaty, which imposes strict limits on the opportunities for deploying anti-missile systems designed to intercept offensive missiles and which therefore remains the basis for maintaining strategic stability in the world."

The opposite pole during Russian debates was occupied by "doves" from the Ministry of Foreign Affairs (MID). Immediately after the conclusion of START II, the Minister of Foreign Affairs Andrei Kozyrev announced:

We see the positive response to the Russian president's proposal on developing a global defense system. Some commentators rather hurriedly declared this to be somewhat utopian. In actual fact intensive talks are currently under way between military and

diplomatic experts of the two countries. These talks are producing unprecedented opportunities for joint work to guarantee security and essentially prevent a first strike.

Reportedly, MID support for global defense was not rooted in their deep commitment to the defensive transition. Most likely, top Russian diplomats saw this problem as no more than a valuable tool, permitting them to come up with a new "revolutionary" initiative that would appeal to the newcomers in the Kremlin and accelerate the process of U.S.-Russian political rapprochement. The initial enthusiasm in MID about ideas of global defense immediately subsided after the change of administration in Washington and the subsequent formal cancellation of the SDI program in March 1993.

Real advocates of the expansion of strategic defensive capabilities, which might lead to violations of certain ABM Treaty limitations, can most probably be found only within the huge Russian military-industrial establishment. Anti-missile space engineering and production segments like "Vimpel," "Cometa," "Astrofizika," "Almaz," "Energiya," and "Poliot," in particular, may encourage the development of such defense capabilities. The drastic reductions in military contracts which took place in 1992 and 1993 forced the directors of numerous design bureaus to struggle for the very survival of their enterprises. Under such conditions a new, ambitious military-industrial program, proposed as a joint venture with the United States, was seen by them as the promising solution to their problems.

At present, further deterioration of the economic situation in Russia, together with the cancellation by the Clinton administration of the SDI program, has undercut hopes in Russia for the testing and deployment of actual anti-missile systems, either jointly or unilaterally. In this respect the ABM Treaty may not be jeopardized; however, future challenges to ABM Treaty compliance might hypothetically come from a number of sources:

- Legal problems of compliance, resulting from the Soviet Union's disintegration;
- Deficiencies of the ABM Treaty's provisions;
- New dangers and threats to Russia's national security;
- Deep relaxation of control of political leadership and the MID over the activities of defense industries and bureaucracies, related to compliance; and
- Disagreements on clarification of the treaty to distinguish between tactical and strategic ABM systems.

Disintegration of the Soviet ABM Network

After the disintegration of the USSR some important ABM and ABM-related facilities were left outside Russian borders, on territories of other former Soviet republics: Ukraine, Kazakhstan, Belarus, and Latvia. Article VI of the ABM Treaty obliges the Parties not to deploy, in the future, early warning phased-array radars other than those constructed on the periphery of the national territory and oriented outward. The word "future" can be interpreted as meaning that Article VI's restrictions do not apply to already existing radars. In fact, after the conclusion of the ABM Treaty, the United States

relied on this definition, maintaining that its ABM radar facility in Greenland and a modernized one in Great Britain were permitted, establishing a precedent which would permit Russia to preserve its existing radars in the former Soviet republics.

Another problem might be caused by the unfinished Mukachevo radar facility located in western Ukraine. Recently representatives of Ukrainian industrial and military circles hinted about their intention to preserve the integrated early-warning system of the former Soviet Union. If this intention is implemented by Kiev, it is probable that the construction of the Mukachevo radar station (which in 1990 was mothballed due to the protests of the local population) will be continued. This activity may be interpreted as deployment of a new radar abroad and thus violate Article VI.

Another question is related to the experimental ABM systems, launchers, and interceptors located on the Sary Shagan test range in Kazakhstan. Their status vis-à-vis the ABM Treaty restrictions might be interpreted in two ways. On the one hand, their presence on the territory of a foreign state might be considered as contradicting Article IX and requiring their withdrawal to Russian territory.

On the other hand, the broad interpretation of Article VI leads to the very opposite conclusion. According to Article III, ABM launchers and interceptors possess an equal status with ABM radars as ABM components. Consequently, exemption of the already existing radars from the restrictions in the Article IX should be extended to all other existing ABM components, including the launchers and interceptors in Sary Shagan. Also, their deployment in Sary Shagan is secured by the Agreed Statement adopted by the ABM Treaty Review Conference on November 1, 1978. In Article I of the 1978 Agreed Statement, Sary Shagan was especially mentioned as one of the two Soviet ABM test ranges.

All of the above mentioned interpretations represent a challenge to the integrity of the ABM Treaty regime. A significant part of the problem might be removed if some former Soviet republics, such as Ukraine, Kazakhstan, and, perhaps, Belarus, were recognized as Soviet successor states from the viewpoint of compliance with the ABM Treaty. This precedent was established by the Lisbon Protocol of May 1992, by which the four former Soviet republics received the status of Soviet successor states in respect to the implementation of the START I Treaty provisions. A similar protocol to the ABM Treaty or a new Agreed Statement would make it possible to keep what remains of the integral Soviet ABM network without disturbing the ABM Treaty regime.

An opposite kind of problem may occur if Russia considers it prudent not to rely on agreements with other former Soviet republics and starts construction of early-warning radars along its own border perimeter, in particular in the western, southwestern and southern parts of its territory to compensate for the unreliable status of radars in Latvia, Belarus, Ukraine, Azerbaijan, and Kazakhstan. Since construction work would take at least a decade, while relations among newly sovereign states change monthly, some of the radars might at some moment—without changing their location—find themselves in the depth of the territory of a new state: confederation or federation with Russia, Belarus, and Kazakhstan, and, less likely, Ukraine, as well.

Since construction of new radars in Russia would be prohibitively expensive in the present economic situation, in the near future Moscow might choose to enhance the

capacity of its existing radar network, especially its central area around Moscow. This could cause trouble with the treaty limits on the number and potential of the radars in one permitted ABM deployment area. This could also provide the radars with some collateral ABM battle-management capability, analogous to the notorious Krasnoyarsk radar.

This problem should be resolved in advance by a special agreement between Russia and the United States, an agreement that should contain some provisions and procedures permitting Russia to construct alternative ABM facilities on its territory. In order not to hinder in any way the potential reintegration of some of the former Soviet republics, additional technical parameters should be agreed upon to clearly distinguish between early-warning and ABM battle-management radars (e.g., hardening, operating frequencies, autonomous energy supply, etc.).

Treaty Ambiguities and Compliance Record

The twenty-year history of the ABM Treaty shows that, at times, the Parties have used deficiencies in the Treaty's text to justify violation of some provisions or even revision of the whole regime. For instance, the Soviet Union referred to Agreed Statement F in its attempts to justify the construction of the Krasnoyarsk radar in an area and with an orientation prohibited by Article VI. According to Agreed Statement F, the parties may deploy phased-array radars regardless of the limits imposed by Articles III, IV, and VI, if they were designed for space tracking or for national technical means of verification (NTM). At the same time, the treaty does not make any clear distinction between ABM radars, space tracking radars, or NTM. This permitted the Soviet military to reject American accusations of a treaty violation by stating that the radar under construction was designed exclusively for space-tracking missions.

The notorious "broad interpretation" of the ABM Treaty, made by the Reagan administration in the mid-1980s, was mainly based on deficiencies in Article II and Agreed Statement D. Article II defines only "current" components of an ABM system (interceptors, launchers, and radars), and keeps open the question of components based on new physical principles. According to Agreed Statement D, in order to prevent ABM deployments above the limits imposed by Article III, specific limitations on future ABM systems, based on new physical principles (e.g., directed or kinetic energy means), should be negotiated under procedures fixed in Articles XIII and XIV.

Proponents of the "broad interpretation" argued that, since Agreed Statement D envisioned new negotiations on ABM systems based on new physical principles, the treaty itself did not limit such systems at all. Thus, the Parties were supposed to be free to at least test them.

However, Agreed Statement D cannot be interpreted in a manner contradictory to the whole treaty. It bans development, testing and deployment of any but fixed land-based ABM systems. This statement means that, since exotic systems' components might differ from those defined in the treaty, specific limitations on their deployment must be negotiated anew without violating the spirit and letter of the treaty. Therefore, neither party enjoys a free hand in dealing with exotic systems. Initially, limitations on them should be discussed with the other side at the SCC. Their testing and deployment could commence only after both signatories had adopted mutually acceptable amendments

which, according to Articles XIV and XV, should be ratified by the legislatures of the two countries.

It is important to note that the Parties eventually confirmed strict interpretations of ABM treaty compliance issues relating to the Krasnoyarsk radar and the “broad interpretation” proposed by the Reagan administration. In the late 1980s, the Soviet Union agreed to halt construction of the Krasnoyarsk radar, considering it incompatible with ABM Treaty provisions. At about the same time, the U.S. Congress rejected the “broad interpretation.” These disputes were resolved by unilateral action and thus did not result in agreed statements or common understandings clarifying treaty obligations.

The ABM Treaty also does not contain adequate precautions against circumventing its restrictions through the testing and deployment of ABM systems under the disguise of testing and deploying anti-satellites, anti-tactical ballistic missiles, and air-defense systems. According to Article II, the treaty limits only ABM systems and their components which are designed for countering strategic ballistic missiles. Article II of the Agreed Statement, adopted by the Review Conference in 1978, defines the system as “tested in an ABM mode” only if it were tested against strategic ballistic missiles. This means that a weapons system, formally tested against satellites, tactical ballistic missiles, or air breathing targets cannot be considered as subject to the Treaty’s restrictions. However, such systems may be technologically similar to ABM weapons and might possess inherent ABM capability.

Article II of the 1978 Agreed Statement extends the definition of “tested in an ABM mode” to systems which were tested not only against strategic ballistic missiles but also against target-missiles with the characteristics of trajectories similar to those of strategic ballistic missiles. Thus, it prevents circumvention of treaty limitations by restricting tests against intermediate-range ballistic missiles. Due to the similarity of their trajectories, they could be evaluated as the best substitute for strategic missiles for testing purposes. However, those restrictions were also not very clearly formulated, which opened the way to additional broad interpretations.

Changing Strategic Threat Perceptions

Modifications of the ABM Treaty might be considered as an option within the context of new risks and dangers affecting Russia’s national security. The need for new defensive tests and deployments could be the consequence of attempts:

- To stabilize the strategic nuclear balance under conditions of deep reductions of strategic offensive weapons;
- To improve deterrence capabilities against a middle-sized nuclear power with strong conventional capabilities; and
- To neutralize security challenges produced by nuclear and ballistic missile proliferation in the Third World.

The provisions of the START II Treaty caused concern about the vulnerability of Russian strategic nuclear forces in their bases after the implementation of treaty reductions. The reductions would lead to a drastic decrease in the number of Russian strategic nuclear targets presumably covered by U.S. counterforce targeting. Up to 70

percent of Russian strategic submarines are normally located in six bases. (START II would increase the ratio of Russian Submarine-Launched Ballistic Missile (SLBM) warheads from 25 percent to 50 percent of the total strategic force level.) After the disintegration of the USSR, only two designated bases for deployment of the air leg of the strategic triad remain on the territory of the Russian Federation. The majority of the 300 mobile, ground-based SS-25 "Topol" intercontinental ballistic missiles (ICBMs) are routinely kept in 30-plus relatively compact basing locations in lightly protected hangars. Even after the planned deployment of 900-1,000 single-warhead missiles (of which 300-400 would be silo-based), the total number of strategic offensive force (SOF) locations would not exceed 500.

In other words, at relaxed readiness status, at least three-quarters of the future Russian SOF might be destroyed in a hypothetical counterforce strike by as little as 30 percent of the post-START II U.S. strategic forces (D-5 and MM-3 warheads). From purely technical calculations, a point ballistic missile defense (BMD) system—ground-based interceptors to protect strategic bases and key command and control installations—could be considered as non-provocative insurance to raise survivability under deeply reduced force numbers and alert levels.

Such defenses might consist of land-based fixed or mobile anti-ballistic missile interceptors, the technology of which is the most advanced in both Russia and the United States. The task of protecting military targets would not necessarily require the development of interceptors capable of reducing collateral damage to urban-industrial areas. Interceptors may have short-range and low-yield nuclear or impact-effect warheads. As effectiveness requirements would not be too stringent for strategic bases compared to cities, anti-missiles might be small in size, relatively inexpensive, and deployed in large numbers. Russia could employ follow-on technology to the S-300 and S-400 high-performance air/missile defense systems.

The same type of systems with non-nuclear interceptors might alleviate the growing concern in the Russian military about the future U.S. conventional counterforce capability against Russian strategic forces and command and control installations. Defensive systems would be designed to intercept air-launched, precision-guided weapons; heavy bombers; strike aircraft; and long-range sea-launched cruise missiles (SLCMs). But it may prove increasingly difficult to distinguish between the treaty-prohibited strategic ABM systems and components, on the one hand, and high-performance air defense weapons, on the other, as well as between nuclear and non-nuclear kill mechanisms.

Since the survivability of U.S. strategic forces is much higher against hypothetical Russian strategic nuclear strikes and almost total against conventional attack—the United States might not want any point-defense BMD systems. It would probably prefer either thin area-defenses against limited missile strikes (which would require much more sophisticated technologies), or no strategic defense system at all. This asymmetry of strategic concerns may produce conflicting priorities with regards to the ABM Treaty between the United States and Russia.

New ABM deployments would contradict the 1974 Protocol to the ABM Treaty (limiting deployment areas to one) and a number of other provisions: the ban on mobile

land-based components (Article V), multiple and rapid-reload launchers (Article V), and ABM-capable components not associated with ABM systems (Article VI).

Even if, for economic reasons, Russia is not capable of immediate deployments on a massive scale, it might like to lay the foundation for such a program for the future, making decisions on resource allocation and program management that, for political reasons, would be hard to reverse later.

Regional Defense Requirements

Another potential incentive for deploying BMD may come from regional security considerations. Russian military sources express concern that their drastically reduced conventional armed forces would be an insufficient deterrent against a broad range of threats and dangers appearing along the long perimeter of Russian borders. In this context, they argue that nuclear weapons should deter not only a nuclear attack but also a massive conventional attack.

However, regional conflicts during the Cold War, confirmed by the history of strategic thinking of the nuclear powers, show that the first use of nuclear weapons is self-deterred by fear of nuclear retaliation that might be inflicted in response by a nuclear-capable opponent. In this context, measures aimed at limiting possible damage to the national territory may be suggested to remove the self-deterrent effect. Consequently, damage limitation to the population of the defending side may be considered essential to the credibility of nuclear deterrence of a superior conventional threat. Of all potential Russian adversaries, only China fits into this power equation, with superior conventional forces but inferior nuclear capabilities.

The task of minimizing the damage that might affect Russia's extensive national territory and population would require at least a dozen ABM deployment areas. They would be designed to protect the main urban areas west of the Urals against medium- and intermediate-range missiles, as well as to prevent penetration by the relatively modest force of Chinese ICBMs that can reach the European part of the Russian Federation (RF). They would also be complemented by dense air- and tactical-ballistic missile defenses against a hypothetical aggressor's non-strategic and air-breathing nuclear capabilities.

The creation of a dozen ABM deployment areas, covering the major part of Russia's populated territory, would contradict Article I of the ABM Treaty, which directly prohibits deploying nationwide strategic defenses. Since this article is the cornerstone of the whole treaty, it seems very doubtful whether such an option would enable the Parties to limit themselves to a reconsideration of a few of the treaty's provisions (the 1974 Protocol and Article III), and thus avoid a formal withdrawal from the ABM Treaty.

Russia is situated in a dynamic and unstable environment. Among the 20 Third World nations with the most advanced missile capabilities, three (North Korea, Afghanistan, and Iran) are direct neighbors of the former Soviet republics, and three more (Israel, Saudi Arabia, and Iraq) possess missiles with sufficient ranges to hit targets inside the former Soviet territory. By the end of the decade, the second list may also include India, Pakistan, and, perhaps, Egypt and Syria. Before long, targets in the former Soviet territory might be reached by missiles belonging to all the big powers of the Middle

East and South Asia. Five of the above-mentioned ten countries (Israel, Iraq, India, Pakistan, and North Korea) may be capable of developing nuclear warheads for their missiles.

Potential military interaction with some of these countries could take place either because of their direct confrontation with Russia, their involvement in conflicts within the former Soviet republics bound to Russia by mutual security commitments, or because of the participation of Russian units with international peacekeeping forces in Middle East and South Asia.

Much of the nuclear capabilities of new nuclear states might be deployed on non-strategic and air-breathing delivery vehicles. This would push Russia towards enhancing the protection of its territory (and that of its allies) by air- and anti-tactical ballistic missile defenses (ATBM). This would not automatically necessitate either revision of, or withdrawal from, the ABM Treaty. The same goes for tactical systems for protecting troops and regional partners in remote areas of peace-making. This requires the development of mobile, rapidly deployable, advanced air defense and ATBM weapons.

Although developments in this sphere would promote inherent strategic defense technologies that are restricted by the ABM Treaty, it would not violate provisions of the treaty directly. However, the treaty's preservation would require its clarification through additional protocols, which might become sources of discord and suspicions of non-compliance.

ATBM Parameters

In late November 1993, the United States initiated SCC discussions on the distinction between anti-strategic and anti-tactical missile defense systems, proposing to continue with development and deployment of the latter, while restricting the former and enhancing the ABM Treaty and strategic stability.

In particular, it was proposed to permit anti-tactical systems tested against targets flying with the speed of up to five kilometers per second (km/sec). This criterion is related to the desirable capabilities of the new U.S. Theater High Altitude Area Defense (THAAD) system, which was developed to enhance capabilities of Patriot-type defense complexes. The performance of the Patriot during the Gulf War of 1991 is the subject of heated controversies in the United States. In contrast, THAAD is supposed to be a great improvement with the capability to intercept missiles within a radius of up to 200 km. Obviously, there are some reasons to develop tactical defenses—the whole question is whether the stated parameter is justified or optimal for the avowed goal.

In particular, five km/sec reentry speed corresponds to missiles with ranges of 3,000-3,500 km, with residual capability against missiles with ranges up to 4,000 km. Many strategic missiles are presently designed or can be launched operationally within this envelope. Such missiles include U.S. Poseidon and Trident I/II SLBMs, French M-20 SLBMs, British Polaris-A3TK SLBMs, Chinese Dunfan-3 and Dunfan-2 intermediate-range ballistic missiles (IRBMs) and Tzuilan-2 SLBMs, Russian SS-N-8 and SS-N-18 SLBMs. Hence, this type of anti-missile defense would inherently possess a substantial strategic ABM capability, and if deployed in sufficient numbers, could represent a thin

territorial defense, unequivocally prohibited under the ABM Treaty. It seems that the 3,000-4,000 km range implied by the five km/sec reentry speed limit would be hard to substantiate by operational considerations. Theater missiles have a maximum range of 1,000 km, and 1,000-2,000 km are the average dimensions of such a theater of military operations. Due to their inaccuracy, tactical ballistic missiles available to Third World regimes, with conventional warheads and with ranges of 3,000-4,000 km, have almost zero effectiveness when attacking anything other than targets like cities. Even then, missile debris falling on the ground after interception may cause no less damage than an explosion of its warhead. Nuclear warheads can cause great damage to both military and civilian targets but require nuclear interception to prevent detonation of the warhead upon impact with wide collateral radioactive contamination.

Logically, it follows that non-nuclear ATBM systems have a very narrow operational range of employment. To defend urban-industrial areas against 3,000-4,000 km range ballistic missiles with nuclear or chemical warheads, an area ATBM is needed. Such a system would not be necessary for the U.S. territory because of the lack of hostile ballistic missiles within this range. For Russia, which is within range of a number of potentially hostile missile-owning regimes, a non-nuclear interceptor would be too expensive and unreliable. Nuclear interception might create more problems than it would solve.

It would seem that supplemental clarifications to the ABM Treaty should, first, provide for the development of ATBM systems that address realistic military contingencies and cost-effectiveness considerations, instead of just being adjusted to technologically attractive but poorly justified projects like THAAD. Second, these clarifications should not permit the development of systems that threaten strategic stability and run counter to the spirit of the ABM Treaty.

At the time of this writing, U.S.-Russian talks on this subject were underway, with Moscow again making steps to accommodate the U.S. position, rather than the other way around. If the permitted technical threshold is within or too close to the "gray area" of a thin strategic ABM capability (like an interceptor's speed of 3 km/sec and target speed 5 km/sec), with no geographic or numerical limits on deployments envisioned, the future introduction and enhancement of the U.S. THAAD system might cause concern in Russia about the spirit, if not the letter, of the ABM Treaty. If and when economic capacity permits Russia to follow suit, even greater concerns may arise in the United States, to say nothing of Britain, France, and China. It goes without saying that the new Russian concession on ATBMs will be used to the utmost by opponents of START II and a potential START III in Moscow as well as by conservative and nationalist groups in their general anti-Western campaign.

The authors of this chapter believe that an optimal and mutually acceptable solution theoretically could be as follows. In a new protocol to the ABM Treaty it could be pointed out that, for the aims of the treaty, ATBM systems for the Russian side are S-300P(M) and S-300B(M), known in the United States as SAM-10 and SAM-12. For the United States, ATBM systems are Patriot and THAAD. Modernization of the above Russian and U.S. systems would be permitted, but the tests of THAAD and new Russian ATBMs would be limited to the interception of targets, delivered by a missile of no more than 1,000 km range. This corresponds to about 3.2-3.3 km/sec reentry speed, which is enough as an interception requirement to defend troops and military facilities against missile

attacks at the theater of operations. At the same time, this speed is insufficient for protection against strategic SLBMs. Limitations on the target missile's range are also important to prevent manipulations with range and reentry speeds at demonstrated ATBM capabilities.

Less stringent constraints might limit ATBM systems by their technical characteristics, numbers, deployment areas, and testing rules. For instance, endoatmospheric systems could be limited by radar potential (the product of mean emitted power in watts and antenna area in square meters) to no more than 300,000 and by an interceptor speed of up to 2.4 km/sec.

For much more dubious exoatmospheric systems, the radar potential may be limited to 3,000,000 and the interceptor speed to 3.2 km/sec. In addition, these systems might be limited by the number of their firing batteries, to be defined by regular agreed threat assessments. Interceptor missile numbers in each battery should not exceed 32. They would not be deployed outside the range of hostile tactical missiles or within the ABM deployment area permitted by the ABM Treaty. ATBM systems or components could not be tested concurrently with permitted tests of strategic ABM systems. Exoatmospheric air-based systems must be prohibited. ATBM tests must not be conducted against targets equipped with ABM penetration aids or having reentry speed higher than 4.5-5 km/sec and a reentry angle less than 25 degrees.

Conceivably these limitations could be relaxed if there were a joint U.S.-Russian ATBM development program. Many political, strategic, technical, and economic arguments could be presented in support of such a program. But it would require a comprehensive set of other rules dealing with joint development, funding, cost-sharing, further employment, and non-proliferation. As of now, the predominant feeling in the Russian ABM community is that the United States does not intend to join efforts with Russia in this area for strategic and commercial reasons.

Addressing the Problem

Russia's basic incentives to continue complying with the ABM Treaty are, undoubtedly, an extremely hard economic situation and a desire to preserve the stability of strategic and political relations with the United States. This basic interest should not be affected even by secondary considerations emerging from new challenges to Russia's security.

The principal causes of potential ABM Treaty compliance problems are the disintegration of the USSR, a lack of political control over defense institutions, and new threat perceptions. Among these factors, the disintegration of the USSR is not very serious at present but may become more prominent by the end of the decade. The perception of new threats and defense requirements may become tangible at about the same time, but economic constraints would still be a serious brake on such projects if they are not undertaken jointly with the United States. The economic crisis and the lack of financial or technological resources in the Commonwealth of Independent States (CIS) do not apply in this case at all.

This means that the disintegration of centralized political control over defense institutions with vested interests should be the principal source of compliance questions.

The interests of influential defense-industrial groups, as well as the still ill-defined official position, do not completely exclude the possibility of some future Russian actions, experiments, and programs that would be either not fully compatible or even contradictory to the ABM Treaty. Proponents of strategic defenses might try to reach their aims by capitalizing on the numerous deficiencies and ambiguities in the treaty provisions.

The current situation in Russia may lead to growing misunderstandings and controversies with the United States. These complicating factors include unprecedented disarray in Russian policy-making, lack of experience and understanding by top political and military leaders in this complicated area, lack of feedback from competent experts in the strategic community, and extremely relaxed controls over the activities of the armed services and defense research-production corporations.

A consistent policy on the part of the United States could help prevent complications regarding ABM Treaty compliance. First of all, Washington should closely monitor all Russian ABM-related activities and provide advance warning of all potential problems to Russian political leaders (the president and Parliament), through direct, reliable channels. This would help to draw attention to prohibited activities in a timely manner, before vested interests dig in their heels after public disclosures.

In some cases, legitimate Russian security concerns may be alleviated by U.S. actions to enhance mutual security in a spirit of goodwill and partnership. For instance, further limitations of strategic offensive capabilities and of the numbers, deployment areas, and range of conventional precision-guided weapons, as well as curtailment of strategic anti-submarine activities, would help to improve Russian SOF survivability without resorting to site defense deployments.

Joint approaches to proliferation threats and cooperation in peace-keeping and peace-enforcement actions could alleviate potential misunderstanding in "gray area" technological developments, like space-surveillance, enhanced ATBM, and air defense systems, etc. Cooperation in systems development programs would be highly desirable but hard to implement.

Finally, the clarification of some ABM Treaty provisions, like "tested in an ABM mode," "ABM system," "ABM component," "ABM radar," as well as the resolution of the ABM-related problems of Soviet successor states including the future of ABM facilities outside Russia, would be of great importance. Agreed parameters of permitted ATBM development, testing, and deployment is the key, although not necessarily along the lines of the November 1993 proposal by the United States. Emerging allowances for the technical parameters of ATBM in the absence of any numerical or territorial deployment limitations (in combination with potential capabilities of air- and sea-based anti-missile systems) seem superfluous for the avowed purpose of defense against tactical missiles and might present or be perceived as presenting a thin area protection capability against Russian strategic forces, envisioned after START II. This issue presents a great chance for the United States to show flexibility in accommodating Russia's strategic concerns in a matter more important to Moscow than to Washington, hence demonstrating a real spirit of "Partnership for Peace."

Regular SCC meetings and thorough joint preparation of amendments to the treaty by the next 1997 Review Conference would be the right forum for this activity. One

politically important step would be a joint U.S.–Russian pledge to work in a cooperative way and to avoid unilateral actions regarding all ABM Treaty issues, which may occur as a result of changing defense requirements or technological developments.

Controls on Substrategic Nuclear Weapons

A. Amirov

Elimination of Intermediate-Range and Shorter-Range Missiles

The Treaty on the Elimination of Intermediate-and Shorter-Range Missiles (INF Treaty) introduced a qualitatively new phase into the disarmament process. If earlier agreements aimed to put the brakes on the arms race, the INF Treaty represented the first real step towards nuclear disarmament. The two sides undertook to eliminate their intermediate- and shorter-range missiles, whether deployed or in reserve and storage, and to prohibit their production and testing. Together with the missiles, their launch platforms and related support equipment and installations were also to be destroyed.

The process of eliminating the missiles covered under the treaty was fully completed by June 1, 1991. In accordance with established procedures, the Soviet Union eliminated 1,846 missiles (889 of intermediate-range and 957 of shorter-range). The United States destroyed 846 missiles, 677 of intermediate-range and 169 of shorter-range.

The INF Treaty provided for a verification mechanism unprecedented in its scope and depth which included, apart from the use of national technical means (NTM), on-site inspections, and a broad exchange of initial and revised data on facilities and installations covered by the treaty. Virtually every obligation assumed under the treaty is subject to adequate verification, employing special equipment in some cases. For instance, powerful x-ray equipment has been installed at the gates of the missile production facility in Votkinsk to examine railway cars to make sure that no RSD-10 (SS-20) missiles are produced.

Of importance also is the fact that the period of inspection does not end with the elimination of the missiles but will continue over a period of 13 years after entry into force of the treaty, up to the year 2003. The goal is to provide both parties with the ability to make certain that production is not resumed and that treaty obligations are observed.

Since the INF Treaty was signed, two documents signed at the highest level of the Commonwealth of Independent States (CIS) are of paramount importance. These documents are the Memorandum of Understanding on succession with respect to the INF Treaty (July 6, 1992) and the decision on adherence by the members-states of the CIS to the INF Treaty (October 9, 1992).

Bearing in mind the new situation, the United States and Russia defined the successor states to the USSR, insofar as the treaty is concerned, as the 12 states constituted on the territory of the former Soviet Union. Facilities subject to U.S. inspection are located only on the territories of Russia, Belarus, Ukraine, Kazakhstan, Turkmenistan, and Uzbekistan. Thus, the practical implementation of the INF Treaty entailed the setting up of "entry points" for the American inspection teams in five additional states (apart from Russia which already possesses the necessary infrastruc-

ture) and communication facilities for them with the United States. It was also necessary to determine procedures for carrying out inspection of U.S. facilities on a multilateral CIS basis.

A number of recent meetings between U.S. representatives and members of the Commonwealth in Minsk were devoted to discussing these questions. The participants were able to start elaborating documents to enable not only the preservation of the treaty but continued compliance with it on a multilateral basis.

It should be noted that, at present, the process of INF Treaty implementation has, as a result of historical developments, undergone certain changes. The withdrawal of Latvia, Lithuania, and Estonia from the USSR in Autumn 1991 required a redefinition of how treaty implementation on their territories could be ensured. This concerned, in particular, U.S. inspections of a number of facilities located in these Baltic republics (Vyru, Aluksne, Karmelava, Ukmerge, Tuarage, Elgava) and subject to the treaty.

Proposals to hold talks on this question put forward at first by the USSR Ministry of Foreign Affairs and later by the Russian Federation Ministry, received a cool response on the part of the Baltic states. Informed of the attitude of Latvia, Lithuania, and Estonia, the United States issued a statement at the Minsk meeting on February 12, 1993, to the effect that it did not regard the Baltic republics as successor states to the USSR and would not in the future carry out inspections on their territories.

In response, Russia felt relieved of its obligation to provide for U.S. inspections in the Baltic states. However, while recognizing that these countries are not successor states to the USSR, it should be pointed out that their territories were formerly a part of the USSR and were subject to treaty obligations. As such, in the interest of greater stability and predictability, it would be helpful if the governments of Latvia, Lithuania, and Estonia pledged not to produce or to have any intermediate- and shorter-range missiles on their territory.

Another factor in the implementation of the INF Treaty concerns certain facilities subject to inspection that have been fully converted to civilian use. One of the first of these was the former operational base of OTR-22 missiles in Granitse, which was handed over for civilian use even before the withdrawal of Soviet troops from the Czechoslovak Federal Republic. A number of similar facilities on the territory of the former German Democratic Republic (Königsbrück, Bischofswerda, Varen, Vohul, Weissenfels, and Jena-Forst) were also handed over for civilian use. These facilities are now on the territory of the Federal Republic of Germany, a state allied with the United States. In this connection, it would make sense to review the inspection of military facilities that have been converted to exclusively civilian purposes.

The implementation of the treaty should hardly be a matter of concern. It is highly improbable that Russia would again be interested in production and deployment of intermediate-and shorter-range missiles, either from an economic or a strategic point of view. There is no serious domestic enthusiasm for the revival of weapons of these classes.

Nevertheless, problems of compliance may occur in two forms. One problem relates to the unstable political situation in republics other than Russia, in particular in Central Asia and potentially in Ukraine. Domestic political and military turmoil may hamper

the monitoring of former INF-Short-Range Nuclear Forces (SNF) sites and facilities. There is not much that the United States or Russia can do about this type of problem, but they have other means of verification. In the stated situation, there should be no suspicion that prohibited activities have been resumed.

A second compliance problem may be related to Russian development and deployment of new surface-to-surface tactical nuclear missiles with ranges extending into the "gray area"—about 500 kilometers—covered by the treaty. These technological developments might proceed from the new Russian military doctrine adopted in November 1993. This doctrine revives the nuclear first-use concept, allegedly to compensate for weaknesses in conventional war-fighting capabilities. It is not without reason that five years after the treaty's entry into force, and more than three years since the elimination of all the respective missiles of the USSR and United States, articles by military authors continue to appear in the Russian press criticizing the inclusion of the OTR-23 (SS-23) missile system among the missiles subject to elimination.

In fact, the OTR-23 (nicknamed "Oka") tactical missile had a range of 450-490 kilometers only, while the treaty covered ground-launched ballistic and cruise missiles with a range from 500 to 5,500 kilometers. As of June 1, 1988, 167 OTR-23 missiles were deployed in East Germany (Weissenfels, Jena-Forst) and the USSR (Stan'kovo, Tsel, Slobudka, Bayram-Ali, Semipalatinsk). There were also 33 missiles kept at repair and elimination facilities.

From the Soviet point of view, to insist on retaining the OTR-23 during the negotiations would have meant to leave the door open for the deployment of U.S. Pershing-1A, Pershing-1B, and Lance-2 missiles in Europe. The highest political leadership of the former USSR decided in favor of the zero option. As was proved by later events, this was the right choice since it not only removed these two types of weapons from the nuclear arsenals of the two sides but also put a halt to U.S. plans to introduce Lance-2 missiles with a range equal to that of the OTR-23.

In this way, from a military point of view, the INF Treaty coincides fully with Russian interests. The complete elimination of intermediate- and shorter-range missiles lowered the level of military confrontation and was an important element in normalizing the military-political situation in Europe and in the world as a whole. This treaty has cleared the way for other disarmament initiatives, beginning with strategic offensive weapons.

As a result of treaty compliance, the United States has eliminated its Pershing-2 missiles and Tomahawk Ground-Launched Cruise Missiles (GLCMs) deployed in Europe. These weapons could reach the territory of the USSR and were perceived as strategic weapons. Without a solution to this question, the negotiations on the Strategic Arms Reduction Treaty (START) would almost certainly have been deadlocked.

In the course of implementing the INF Treaty, methods to solve organizational and technical problems were worked out (mutual accounting of inspections, inspection procedures and apparatus, etc.), which later were applied in other arms limitation and disarmament agreements. This is true of the START I and START II treaties, the Treaty on Conventional Armed Forces in Europe, and other bilateral and multilateral agreements.

Unilateral Commitments on Tactical Nuclear Weapons

President Bush's proposals of September 27, 1991, and Gorbachev's response and counterproposals of October 5, 1991, as well as those put forward by Yeltsin in early 1992, advanced radical steps with respect to the limitation and elimination of tactical nuclear weapons (TNW). The initiatives of the two sides differ from previous arms control procedures (negotiations, agreements, ratification, verification) in that part of the proposed measures were adopted on a unilateral basis and part by mutual agreement. As a result, instead of complicated negotiations, Washington and Moscow assumed certain unilateral obligations and solved a number of problems which, otherwise, it would have taken years to settle. President Bush's initiatives in respect to tactical nuclear weapons included:

- The removal of all ground-based nuclear weapons (nuclear artillery shells and nuclear warheads for Lance missiles) from Europe and South Korea, to be subsequently dismantled and eliminated in the United States;
- The removal of all TNW from surface ships and submarines, as well as nuclear depth charges from land-based naval aviation, and the relocation of these TNW for storage on the territory of the United States with a view to the subsequent elimination of about half of them; and
- Halting the development program of the SRAM-T short-range attack missile (a version of the SRAM-2) intended for tactical strike aviation.

The main reason for the U.S. initiative was clearly related to the disintegration of the Soviet Union, which created the threat of the loss of control over nuclear weapons and, in the first instance, TNW. The desire on the part of the United States was to bind the then formally existing central structures of the Soviet Union and later its successor states with obligations to safeguard and eliminate TNW. The United States feared a loss of control over these weapons in the course of local disputes or as a result of splitting the Soviet armed forces among the new, independent republics. The land forces, the Air Force, the Air Defense forces, and the Navy of the former USSR were all armed with tactical nuclear weapons that were located at storage sites in nearly all Soviet military districts.

The danger of the emergence on the territory of the former Soviet Union of a number of new nuclear states was a great source of concern to Moscow as well. That is why Gorbachev immediately reacted to the U.S. initiative by assuming obligations in respect to TNW of the USSR. All types of nuclear armament of the land forces, the Air Force, and Air Defense forces were to be transferred to sites near production facilities and to central storage depots with a view to the subsequent elimination of a large part of them. Later, Yeltsin made a public statement to the effect that Russia was the only legitimate nuclear successor state to the Soviet Union. According to him, Russia would eliminate all its stockpiles of ground-based and a third of its sea-based TNW as well as half of the nuclear warheads of its anti-aircraft missiles. It was also decided, at a later date, to cut by half the stockpiles of tactical nuclear aviation munitions. It was proposed that the remainder of these munitions would also be removed by Russia, on a mutual

basis with the United States, from the combat units of the tactical strike aviation and transferred to central storage sites.

In compliance with its obligations, Russia at once started to withdraw TNW from the former Union republics to its own territory. Agreements on this were reached with the other CIS members at meetings in Alma-Ata and Minsk (December 1991) and the withdrawal proceeded rather smoothly, with the exception of Ukraine's "nuclear manoeuvres."

At first, Kiev intended to use TNW as a kind of political lever. In contrast to Strategic Offensive Forces (SOF), these weapons do not employ a complex command and control system and may be used with relatively simple dual-purpose delivery systems. That is why President Kravchuk's decision in February 1992 to halt the transfer of TNW to Russia caused quite an alarm in Moscow. The urgent joint efforts of Russia and the United States forced the Ukrainian president to resume the transfer of nuclear munitions. The statement by the Russian Ministry of Defense that the withdrawal of TNW from Ukrainian territory had been completed about a month earlier than planned (June 1, 1992) came as a complete surprise to President Kravchuk. Such divergence in the official estimates of the time needed for the withdrawal of TNW from Ukrainian territory gave rise to considerable concern as to the reliability of information of such vital importance.

Eventually, dividing TNW among the former Union republics was avoided. Tactical nuclear munitions were removed from the arsenals of the ground forces, Air Defense forces, and the Navy and were concentrated at sites near assembly factories and at central storage depots in the Russian Federation (RF). The list of types of TNW earmarked for destruction is also impressive. For the first time, a decision has been taken to dismantle and convert nuclear weapons and not just to put them in storage, as before. Several types of nuclear weapons (nuclear shells and mines, nuclear warheads for tactical missiles) were to be completely eliminated.

These disarmament measures have been hampered by the lack of policy coordination in Russia and by limitations on storage, space, and transportation facilities. Due to the divergence of departmental interests, the priorities and actions of the president's Office, the Ministry of Foreign Affairs, the Ministry of Defense, and the Ministries of the Defense Industry and Atomic Energy have led to the overcapacity at storage depots, violations of the safety rules, and additional expenditures.

It is quite difficult to give an estimate of Russian quantitative reductions in the tactical nuclear inheritance from the USSR since little information exists. That is why, when evaluating Russian obligations regarding the limitation and elimination of TNW, estimates have been derived from Western information and on analysis of the structure and deployment of the armed forces of the former USSR.

According to these estimates, Russia will have to destroy approximately 9,200-9,450 tactical nuclear munitions including about 5,000 nuclear artillery shells, tactical missile warheads, and nuclear land mines; 1,250 nuclear warheads for anti-aircraft missiles; 1,200 naval nuclear weapons (depth charges, torpedo warheads, and warheads for various types of missiles); and 1,750-2,000 nuclear gravity bombs and aviation missiles.

The United States, in its turn, will have to eliminate at least 3,050 tactical nuclear munitions (1,300 artillery shells, 850 warheads for Lance missiles, and about 900 naval weapons, mainly depth charges).

In view of the unprecedented scale of the announced initiatives, the need exists for some additional formal agreements to supplement unilateral disarmament. These should provide for the exchange of all relevant information on the dismantling and utilization of TNW and create favorable conditions for a further lowering of the levels of TNW.

The two sides did not establish schedules for the elimination of their TNW, although for Russia this represents a serious economic problem. The cost of dismantling and converting TNW is estimated at 150 billion rubles (in 1992 prices) which, in the face of a substantial budget deficit and economic crisis, represents a heavy financial burden. In this connection, at parliamentary hearings on defense law some Defense Ministry representatives suggested that the TNW elimination program be postponed. One official called for delayed implementation until "the completion of the first stages of an even more expensive program—the withdrawal of forces and the social provisions for military personnel" were completed. Hence, economic factors might become especially important with regard to TNW reductions.

It is clear that the schedule for the elimination of TNW is closely linked to the question of the security of those thousands of tactical munitions that were transferred to Russia in such a hurry. The ever more frequent raids on military depots and the stealing of weapons and ammunition make the security of the Russian nuclear storage sites into a serious problem. Although Russian officials have given their Western partners firm assurances about the complete security of the overcrowded nuclear storage depots, a potential danger still exists.

That is why a Russian-American accord on cooperation in the construction of storage sites for nuclear munitions, improvement of the assets for their transportation, and the elaboration of a technology for the utilization of enriched uranium, plutonium, and tritium as sources of energy for peaceful purposes would be of great importance. These measures would help resolve security problems related not only to TNW but also to SOF reductions, which will make available for destruction 7,000-8,000 more nuclear warheads by the end of the 1990s.

Greater reliance on tactical nuclear weapons, in line with the new Russian military doctrine, and the deployment of new battlefield systems for ground forces would contradict Soviet/Russian unilateral commitments to their withdrawal from the military units. In this event, the deficiencies of the much-praised unilateral reduction commitments would become obvious. The United States would hardly be able to detect such deviations in time. It would be especially difficult to prove any such allegations without agreed verification systems or provisions in the absence of any organization for such discussions, such as the Standing Consultative Commission (SCC). Moreover, extremely vague definitions, quantitative parameters and schedules for TNW withdrawal, and reduction and elimination would significantly complicate verification.

Finally, another potential problem is the blurred distinction between aircraft TNW, which are largely exempt from unilateral commitments, and strategic nuclear bombs for heavy bombers, which are addressed in START II. U.S. heavy bombers and tactical strike

aviation are armed with a number of similar types of gravity bombs (B-28, B-43, B-61, B-57, B-83). Some types of Russian gravity bombs are probably suited for delivery by strategic and tactical aircraft, and short-range air-to-surface missiles of AS-2, AS-3, AS-4, AS-5, and AS-6 types are used by heavy bombers, medium bombers, and naval strike medium-range aircraft.

The new counting rules laid down by START II postulate that not only Air-Launched Cruise Missiles (ALCM), but also short-range missiles and bombs are counted as separate warheads in the aggregate ceilings. Although bomber weapons are not limited per se, but rather by the number of heavy bombers equipped for the declared actual loadings of missiles and bombs, the essence of this provision is to limit the number of bomber-delivered nuclear weapons. A large number of surplus nuclear bombs retained for tactical strike aircraft would aggravate the problem of potential break-out by deploying them on heavy bombers converted for non-nuclear missions.

There are good reasons for Russia and the United States at START II follow-on talks to enhance their unilateral decisions to put heavy bombers off alert by agreeing to store their weapons at central storage sites away from airfields. In this respect the problem of tactical aviation gravity bombs might become one of the complicating issues. Storage of nuclear bombs at tactical aircraft airfields (where heavy bombers may be quickly redeployed), or mixed basing of strategic and tactical aviation would provide the possibility of easy and undetected circumvention of this agreement.

This problem could be resolved by prohibiting TNW storage at airfields for nuclear bombers or converted heavy bombers. This would also imply a prohibition of mixed basing of converted heavy bombers and nuclear-certified tactical aircraft or at least the application of the 100-kilometer rule to TNW for strike aircraft at converted heavy bombers' airfields. A better solution would be to reach an agreement to store both strategic and tactical aircraft nuclear weapons (including those remaining in Europe) at centralized depots. Following the provision set by START II, the storage sites of these weapons should not be located closer than 100 kilometers from any airbase.

It is of great importance that data be exchanged on the numbers and types of aircraft equipped for TNW and on the location of the storage sites of their nuclear weapons. There might be a provision for permanent perimeter monitoring of central storage sites by the other side or challenge inspections at airfield depots and notification procedures on the numbers and types of stored weapons, their withdrawal, delivery, or relocation.

Unilateral commitments on TNW are both a success story and an example of the inherent limitations of unilateral steps. Unilateral steps were essential to achieve a break-through, but more thorough, formal agreements became necessary to ensure compliance and provide for safety and transparency of constrained nuclear arsenals.

In order to enhance compliance with the INF Treaty and unilateral commitments on TNW, U.S. policy should address particular motives for potential violations. With respect to post-elimination INF-SNF monitoring, comprehensive U.S. surveillance of Russian development and testing activities would provide early warning of potential violations. In this case, raising this issue well in advance at closed sessions with Russian high-level political authorities may resolve the problem—if it is caused by the disinte-

gration of centralized political control of defense industries—before it acquires political significance.

Western financial and technological assistance would be of crucial importance in dealing with the problems caused by the economic crisis in the CIS relating to transporting, safely storing, dismantling, and utilizing tactical nuclear munitions. Parallel dismantling is very important as well so that Western assistance to Russia is not portrayed as “a reimbursement for unilateral dismantling of Russian security.” Some kind of technological cooperation on nuclear weapons elimination, by which Russia could also contribute to U.S. reductions, would be of the utmost importance to dispel domestic political opposition to what is perceived as humiliating and unilateral steps detrimental to Russia.

Finally, in order to deal with potential problems of compliance with TNW reductions caused by new threat perceptions and military requirements, the United States should take the initiative in pursuing follow-on, formal agreements. These negotiations should cover the exchange of data, redeployment and elimination schedules, and monitoring systems and procedures to ensure implementation commitments and to prevent accidents or theft of nuclear munitions and materials. It is Russia’s concern that the West would gain clear-cut geostrategic, economic, and technological advantages if there were a revived interest in deploying large tactical nuclear forces. It would be useful if clear messages to this effect were conveyed about the undesirability of a renewed interest in TNW at meetings of U.S. and Russian political and military authorities and at parliamentary exchanges.

Conventional Force Reduction in Europe

A. Konovalov, S. Oznobistchev

The Conventional Forces in Europe (CFE) Treaty appears to be a document with a complicated destiny. The difficulties for treaty implementation are due primarily to the profound and revolutionary changes that transformed the very geopolitical basis of security relations in the world. But they were also caused by the bureaucratic character of the CFE negotiating process in 1989–90 and the overwhelming desire of the majority of the diplomatic community to report positive results to their capitals. Actually, the European military and political communities directly involved in the negotiations were almost unanimous in their efforts to finish the negotiations at an early date at any cost.

Key Provisions of the CFE Treaty

The initial concept of the treaty was based on the bipolar confrontation between East and West and the practical necessity of reducing conventional forces and armaments down to equal levels between two opposing military alliances. But during the negotiating process, the democratic revolutionary developments within the East European countries became a political reality and almost led to the final dissolution of the Warsaw Pact. Meetings of the Eastern Bloc continued to discuss and work out certain details of a common position, but their details were immediately known to the West. The negotiators realized the inevitable tide of events but did almost nothing to adapt the treaty to changing realities.

Another factor that could not be predicted in the course of the negotiations was the disintegration of the Soviet Union itself. As a result, additional national quotas had to be devised not only among the East European states but also among the newly independent republics within the former USSR. This procedure was finalized at the Tashkent meeting of the Commonwealth of Independent States (CIS) in May 1992.

When the treaty was signed in Paris on November 19, 1990, the European environment was already quite different than at the time when the CFE Treaty's main guidelines had been elaborated. The area of application originally was supposed to cover the territory from the Atlantic Ocean to the Ural Mountains and to include the armed forces of 16 members of NATO and 7 members of the Warsaw Treaty Organization (WTO). In fact, due to the unification of Germany, 22 states signed the treaty instead of the 23 that started the negotiations.

Five types of arms, called treaty-limited equipment (TLE), were the subject of treaty provisions: battle tanks, artillery pieces, armored combat vehicles (ACV), attack helicopters, and combat aircraft. All were identified as the principal means of conventional offensive operations and, by analogy to the Strategic Arms Limitation Talks (SALT) and the Strategic Arms Reduction Talks (START), were to be limited on the principle of parity at lower levels to reduce fears of the other side's offensive superiority. The overall equal ceilings for each of the alliances in the application area were as follows: 20,000 tanks; 30,000 armored combat vehicles; 20,000 artillery pieces; 6,800 combat aircraft; and 2,000

attack helicopters. In addition, a "sufficiency" ceiling was introduced for any individual state within an alliance: that state was not permitted to hold more than two-thirds of the alliance inventory.

Unlike strategic arms control, conventional force reductions that could provide offensive capability even under equal overall ceilings were designed around geographical areas. Four concentric zones were defined, each of them with its subceiling on TLE. For example, in the fourth zone (Central Europe) each alliance could not have more than 7,500 tanks in active units. The third zone (extended Central Europe) included the fourth zone plus some other territories and had a limit of 10,300 tanks. The second zone (fully extended Central Europe) included the two above zones plus rear areas and established a ceiling of 15,300 tanks, no more than 11,800 of which could be in active units. A limit of 4,700 tanks was placed in the flank zones (southern and northern Europe), which together with the second zone, added up to the overall limit of 20,000 tanks for each side. This zonal principle applied to all TLE, except aircraft, which were too mobile to be effectively allocated to each zone.

The treaty provided detailed definitions, extensive elimination procedures and storage conditions, rules for regular data exchange, and verification with on-site inspections.

The Implementation Record in 1990–94

Three periods may be distinguished in the history of coping with the problems of treaty implementation. The first one started from the signing of CFE on November 19, 1990, and lasted until the end of 1991 when the Soviet Union disintegrated. The second period lasted until July 17, 1992. The third one continues up to the present time.

First Phase of Implementation

During the first period, the implementation of the separate provisions of the treaty according to the Provisional Application Protocol started. Several main compliance questions were raised to the Soviet Union in this period.

First of all was the problem of armaments—tanks, armored combat vehicles and artillery of larger than 100 mm caliber—belonging to naval infantry and coastal defense forces. Despite harsh criticism at the final rounds of negotiations, Soviet military representatives adamantly refused to include these armaments into the declared ceilings. Their motive was to exclude them from the agreed upon maximum individual national levels of TLE holdings and from the reduction liability of the USSR. In particular, it meant the exclusion of four Soviet naval infantry brigades and three divisions and several artillery units of the coastal defense forces.

The Soviet side introduced its own rather short litany of arguments. According to the CFE mandate "naval forces . . . will not be addressed," and thus they could not be the subject of negotiations; naval infantry and coastal defense units were always included in the USSR Navy; thus these armaments were not to be covered by treaty limitations.

No other participant in the treaty negotiations agreed with these arguments. All of them appealed to the counting rules of the treaty, which plainly prescribed in Article III that "all battle tanks, armored combat vehicles, artillery, combat aircraft and attack

helicopters . . . within the area of application shall be subject to the numerical limitations and other provisions set forth.”

Only six exceptions were made. These included armaments in manufacture, research, development and testing, historical collections, or those that were decommissioned, awaiting export or re-export, or in transit through the area of application for up to seven days. Holdings of armored combat vehicles and multi-role attack helicopters by units “designed and structured to perform in peacetime internal security functions” were further exempted, save those armored infantry vehicles in excess of 1,000, which are accountable under normal limits.

From the very first moment of the disagreements it was clear that attempts to evade the treaty’s limitations on armaments held by the naval infantry and coastal defense units were destined to fail. First of all, this procedure could create a lawful and an unlimited channel to circumvent the treaty. It should be noted that coastal defense units of the USSR just before the signing of the treaty were “normal” motor-rifle divisions of the land forces, placed in the coastal sea areas. With the prospect of deep reductions, these divisions were transferred to the Black Sea and the Baltic and Northern Fleets.

It should also be noted that the counting rules were agreed upon before the signing of CFE at a high level—during the visit of then-foreign minister Eduard Shevardnadze to the United States in September 1990 and in the course of the meeting between the then-Soviet Chairman of the General Staff, General of the Army Moiseev with the U.S. Deputy Secretary of State Reginald Bartholemew on November 8–10, 1990, in Moscow.

Quite probably, if the problem of these units had been raised by the Soviet side beforehand in the process of negotiations, it would have been solved in a constructive way. Instead, the prolonged discussion on the naval infantry and coastal defense armaments took place for more than seven months. The Soviet proposal to “freeze” the number of armaments in the units of these categories at the November 19, 1990, level was not accepted. The delay of the treaty ratification caused by this obstacle was of no use to any country, not even the Soviet Union which, under numerous political and economic difficulties, was interested in the treaty’s prompt entry into force.

The question was solved at the plenipotentiary conference of the states-parties to the treaty, where the Soviet government on June 14, 1991, took the following obligations:

- Not to exceed the levels of armaments in being on the date of the treaty’s signing at the disposal of naval infantry units (120 tanks, 753 ACVs and 234 artillery systems) and coastal defense units (813 tanks, 972 ACVs and 846 artillery systems);
- To include the numbers of the armaments of these units in all holdings of TLE: in maximum ceilings of armament holdings, in regional sublimits, in combat unit sublimits etc.; and
- To enlarge the reduction liability for the Soviet armaments for the subsequent numbers of armaments existing within the naval infantry and coastal defense units on the date of the signing of the treaty (November 19, 1990). Part of the armaments (50 percent of the tanks and artillery, 486 ACVs) could be withdrawn and eliminated or converted outside the area of CFE application.

The declaration of the Soviet government, though not made within the framework of the treaty, possessed a juridically obligatory character. It can be judged as a fault of negotiators, primarily Soviet and American, that the problem of naval infantry and coastal defense weapons emerged and was blown out of proportion. The delegations tried to ignore this problem under the pressure of a severe time limit with the date of the Paris summit fixed in advance. As a result, the final disadvantageous solution for the Soviet side was mainly the fault of its own military leadership. The USSR accepted obligations which no other maritime state-participant to the treaty was bound by:

- To limit the numbers of weapons in the naval infantry and in the coastal defense separately with rigid low ceilings, thus depriving the armed forces of the ability to strengthen the Navy or the naval infantry with weapons from land forces in case of necessity (even within the total holdings of the treaty); and
- To limit conversions within the naval infantry and coastal defense units to 753 ACVs of the Multi-Purpose Lightly Armored Vehicle (MT-LB) and Armored Personnel Carrier (APC) look-alike vehicles (though the number of such conversions is not limited by the treaty).

In exchange, the Soviet side received an extremely modest prize: the right to withdraw half of the weapons being reduced within the naval infantry and coastal defense units to the Asian part of the country, but with the obligation to eliminate there an equivalent number of weapons.

A similar issue was related to the armaments within units of the Strategic Rocket Forces (SRF). The Soviet Union did not include these APCs, employed to escort and defend strategic sites and systems, into holdings submitted for reductions. This was also considered by the West as an attempt to break the counting rules of the treaty. As a result of bargaining the Soviet Union took the obligation to have no more than 1,701 pieces of these types of vehicles in its declaration on June 14, 1991. This number was equal to the TLE held by the USSR on its territory on the date of the treaty's signing.

Here again the Soviet military was looking for excuses to reduce the scale of future cuts. It was a kind of "institutional" professional opposition to CFE arms reductions. The problem occurred when the Soviet side presented extremely low numbers of TLE compared to those figures previously published by official Soviet sources. This happened due to the pre-treaty redeployment from the area of application of massive amounts of treaty-limited weapons. Such large-scale redeployments before the treaty's signing, while not being a direct legal breach, still fueled great concern about possible future circumvention and about Moscow's good faith. Moreover, the force relocation was not openly declared by the Soviet side in advance but was disclosed by American intelligence satellites.

Altogether during the process of negotiation, the Soviet Union redeployed beyond the Urals about 16,400 tanks; 15,900 ACVs; 25,000 artillery systems; and 1,600 combat airplanes. As a result, the Soviet Union had to assume additional obligations, which were declared in the Joint Consultative Group on June 14, 1991. Accordingly, the Soviet side took the obligation to eliminate additionally not less than 6,000 tanks; 1,500 ACVs; and 7,000 artillery systems out of the TLE beyond the Urals during 1991–95. It was announced that these weapons would not be stored as complete sets within military units,

and they would not be used for creating a strategic reserve or operational groups of forces. The obligation was taken that when the treaty would enter into force, the Soviet side would present information to all states-parties on the places of deployment and numbers of tanks, ACVs, and artillery systems intended for storage or repair.

Some of the claims addressed to the Soviet Union were considered rather serious. Among them was the problem of declared sites of verification. This question was of principal importance as the number of such objects of verification determine the treaty's passive inspection quota. The initial figure presented by the Soviet side and confirmed by high-ranking military officials was 1,562 such sites. But in the information presented during the signing of the treaty, this figure was reduced to 895 objects of verification.

A number of compliance concerns of equal importance appeared. Some were connected with the divisions that had complete sets of armaments to deploy a motor-rifle or tank division but did not have enough personnel. These divisions were presented by the Soviet side as a designated permanent storage site (DPSS). Concerns over compliance were rather valid because the Soviet approach reduced the number of objects of verification and because such divisions did not strictly fall within the definition of what constituted a DPSS. At the same time, Soviet peculiarities, in particular the traditional modes of deployment of its armed forces, were not taken into consideration in the treaty. Finally the Soviet representatives agreed with the Western argumentation and converted such divisions to reflect the agreed criteria of a DPSS.

For a long time, the APC MT-LB was considered by the West as a technical breach of the treaty. It was argued that the Soviet declaration that all 8,000 of such carriers were converted was not true. (In accordance with the treaty, they had to be deprived of the capacity to carry an infantry unit and be able only to tow a cannon.) After intensive discussions, the West could not prove the existence of any breaches here.

At a certain stage of the negotiations, so-called auxiliary units started to appear in Soviet data. As a rule such divisions and brigades existed only on paper and, after a number of claims, were eliminated in the structure of the Russian armed forces.

Second Phase of Implementation

The second period for the CFE Treaty implementation began in August 1991. It introduced several new and difficult problems connected with the disintegration of the Soviet Union and the emergence of a number of newly independent states on its territory. These fundamental developments challenged not only the very core of the treaty but also the traditional logic of building security in Europe.

The main problems that had to be solved in this period of time were connected with the declarations of sovereignty by the three Baltic republics and with the division of the TLE holdings, quotas, and obligations of the former Soviet Union among the eight newly independent states within the treaty's area of application.

On October 18, 1991, Soviet representatives in the Joint Consultative Commission declared that the USSR considered its conventional armaments and equipment located on the territory of Lithuania, Latvia, and Estonia as being treaty-limited. It was decided at the same time, however, that the area of application would not include the territory of the three Baltic republics. Thus, one of the consequences of disintegration was the

reduction of the treaty's area of application. This greatly distorted the CFE principle of regional limitations of TLE. In the Kaliningrad region, for instance, Russia now theoretically had the right to deploy the maximum of 4,200 tanks (out of the overall total of 6,400 allocated to it in the entire country, constituting more than 65 percent of its treaty-limited tanks holdings, 76 percent of the ACVs as well as more than 50 percent of artillery).

The implementation of the CFE Treaty under historic new conditions, in the absence of the USSR and the Warsaw Pact, definitely demanded new approaches. After the disintegration of the Soviet Union all of the other newly independent states that found themselves within the area of application confirmed their readiness to fulfill CFE obligations. But the implementation of these intentions demanded considerable efforts on the part of all state-parties to the treaty. It was necessary not only to divide all the Soviet Union's obligations as far as the CFE process was concerned but also to secure all the principal provisions of the treaty, including the regional limitations that lost their meaning with the USSR's disintegration.

On May 15, 1992, seven CIS participants and Georgia signed an agreement in Tashkent on the principles and procedures of CFE Treaty implementation and made a joint declaration in connection with treaty provisions. The plenipotentiary conference of the states-parties meeting in Oslo on June 5, 1992, took these documents into consideration and adopted a number of understandings and recommendations in connection with the disintegration of the USSR. At this time, the states-parties confirmed their intention to do everything in their power to ensure the treaty's entry into force by the date of the high-level Conference on Security and Cooperation in Europe (CSCE) meeting in Helsinki on July 9-10, 1992.

The plenipotentiary conference of the states-parties held in Helsinki on July 10, 1992, decided to start the provisional application of all treaty provisions beginning on July 17, 1992. At the same time, the implementation of the Final Act regarding the limits for personnel in the conventional forces started. The conference decided upon July 17, 1992, as the baseline date for entry into force of the CFE Treaty and the personnel limits of the Final Act.

Third Phase of Implementation

During the third period of treaty implementation, beginning July 17, 1992, when the implementation formally started, questions of Russian compliance were mainly concerned with practical aspects of verification.

One of the problems was once again the list of declared sites subject to inspection, or objects of verification. The information submitted by Russia within thirty days after the provisional application of the treaty (on August 16, 1992) was based on the assumption that the main objects of verification within a certain military facility constituted separate "declared sites." Such an approach actually undercut the very concept of declared sites, which was elaborated in the course of the CFE negotiations and was based on a delicate and complicated compromise. The revised approach, which resulted in a larger number of declared sites, appeared to correct data initially presented by the USSR. As a result of this new Russian approach, the treaty regime of on-site inspections could be seriously weakened for a number of reasons:

- Part of the territory of a certain military facility where the TLE could be located would have to be excluded from inspections; and
- The inspected state-party had more than sufficient time to withdraw excessive TLE to the neighboring object of verification, considered to be a separate declared site, before the arrival of the inspectors.

These negative consequences resulted from the erroneous approach made by military specialists while preparing the data on the Russian armed forces. Of course, the revised data caused rather sharp criticism from other participants and American representatives in particular. The situation improved as a result of the next exchange of data on December 15, 1992. For the time being, this problem was considered to be resolved.

A number of other compliance questions were raised with Russia and some other participants to the treaty. Some remain unresolved:

- The question of subordination of naval infantry and coastal defense units of the Black Sea Fleet was not resolved between Russia and Ukraine. At present the data concerning the armaments of these units are submitted by both sides;
- The final aggregate reductions of the newly independent states appeared to be smaller than was planned for by the Soviet Union, which contradicted the treaty and the obligations undertaken by the Commonwealth of Independent States (CIS) participants in agreements reached in Alma-Ata, Minsk, and Tashkent in 1991–92. In particular, about 2,000 tanks, APCs, and artillery pieces were “lost” in the Trans-Caucasus area in November 1993. (That is, no state could account for this TLE number in the regular data exchange. Russia, Georgia, Armenia, and Azerbaijan could not account for the weapons and were trying to put the responsibility on each other.); and
- There was a delay with the provision of information concerning the weapons redeployed beyond the Ural Mountains. Additional problems occurred with the quotas for eliminating military equipment declared among Russia and the Asian CIS states, where some of these weapons had been redeployed.

On December 15, 1992, Russia presented data on its armed forces that did not cause any serious concerns over compliance. During the first year of treaty implementation, Russia and the other CIS countries have had some difficulties implementing the CFE Treaty but have done so without serious violations. Inevitably, there have been technical flaws in the process of inspections, weapons elimination, and the presentation of data, but these have been efficiently addressed within the framework of the Joint Consultative Group and acting national verification institutions. As for the future, more serious problems may emerge as a result of developments in conflict areas of the former Soviet Union and the domestic evolution within Russia.

Future Challenges to the Implementation of the Treaty

One obvious problem in CFE Treaty implementation for Russia is linked with the “flank zone” limits. The flank zone embraced four military districts (MDs) of the USSR: Leningrad, Odessa, North Caucasus, and Trans-Caucasus. After the disintegration of the Soviet Union, only two of these four MDs were left in Russian territory: Leningrad

and North Caucasus. The Protocol signed in Tashkent by successor states gave Russia the following limits to be derived between these flanks:

- Main Battle Tanks (MBTs) – 1,300, including 600 stored;
- ACVs – 1,380, including 800 stored; and
- Artillery – 1,680, including 400 stored.

The most serious obstacle was the limit on ACVs. According to the above ceilings, Russia had the right to deploy in the two remaining flank MDs less than one full-strength motorized rifle division or two to three brigades. The latest variant of the motorized rifle division structure in Russia includes 637 ACVs. (For a tank division, the number of ACVs is 402.) Meanwhile, the northern and southern parts of the flank zone are considered strategically important by Russian military authorities.

The North Caucasus represents one of the most unstable regions of the Russian Federation. It includes the territory of several autonomous republics such as Chechnya and Ingush Republic. Two bloody conflicts have been going on in close proximity to the Russian border in this region—between Armenia and Azerbaijan in Nagorno-Karabakh and the civil and ethnic wars (Abkhazia, Southern Ossetia) in Georgia.

The Russian military considers this district as a top priority in its efforts to ensure an adequate military posture for the Russian armed forces. According to the military reform plans and Russia's new military doctrine announced in 1993, the North Caucasus MD is to become the front-line area of massive military deployments. Deployment plans include three motorized rifle and two paratroop brigades, one paratroop division, and other units of rapid deployment forces. Besides, under the flank quota the weapons of three Russian motor rifle divisions (145th and 11th in Georgia and 26th in Armenia) are to be deployed.

Russian authorities have been trying to figure out ways to solve the problem without violating the zonal limitations of the CFE Treaty. One approach, initially adopted by the Ministry of Internal Affairs, was to deploy additional formations of internal security forces in the North Caucasus MD. Three-and-a-half divisions of internal security forces were stationed there, forming its own "paramilitary district" in the region. Another option would be to build up the border guard forces in the region. These forces, however, would face the same problem of strict limitations on the numbers of tanks and ACVs.

Among other options, which have been discussed intensively in Russian military circles, is a proposal to create several mountain motor rifle brigades for the North Caucasus military district. The experience acquired in Afghanistan has shown the need for specially trained mountain troops. Heavy armored vehicles are not efficient in the mountain terrain and such brigades can use light weapons and vehicles that are not limited by CFE conditions.

The USSR armed forces had very limited experience in this area. One motor rifle brigade consisting of two light armored vehicle battalions and two mountain-trained battalions was deployed near Osh, Kyrgyzstan, without any combat vehicles. But even several new light mountain brigades would hardly alleviate the flank zone problem for

Russia. Article V of the CFE Treaty allows temporary deployment of 153 MBTs, 241 ACVs (1 brigade), and 140 artillery pieces in addition to the permanent ceilings. But these limits seem quite insufficient to the Russian Ministry of Defense for the North Caucasus and Leningrad military districts.

Beside the new security requirements of the southern part of the flank zone, Russian military officials consider it essential to ensure the protection of the vital Naval, Air Defense, Air Force, and support and defense industrial facilities in Leningrad, Severomorsk, and Arkhangelsk regions, which house the bulk of Russia's strategic nuclear submarines. These forces are to acquire much greater importance for Russian strategic deterrence after the implementation of the START II Treaty with the United States. The CFE allotment of heavy weapons for just one ground forces division is perceived to be inadequate for these two crucial regions, comprising together more than 50 percent of the European part of Russian territory. Moreover, these are the only two areas directly adjacent to the territories of NATO member-states, Turkey and Norway.

On the other hand, it looks like considerations other than threat perceptions are affecting Moscow's position. The CFE Treaty does not preclude concentrating the majority of flank force allocations in the South, taking into account the low probability of any conflict requiring the engagement of massive ground forces on the Kola peninsula. (Norway has a little more than 200 tanks and the same number of ACVs.) Russian deployments in the North Caucasus MD under CFE flank limits may exceed treaty-permitted forces for all three Trans-Caucasus states. Russian deployments would also be superior to the Third Field Army of Turkey, situated along the border of Georgia and Armenia. One significant reason, not revealed by Russian military officials, may be that the North Caucasus is one of the most convenient and favorable regions in which to redeploy forces withdrawn from abroad. This problem has become a major headache since the rate of Russian armed force reductions has been lagging behind its troop withdrawals from the near and far abroad.

It seems that Russian authorities will continue to search for resolutions to this problem. One option may be redistributing the existing limits between categories of weapons, namely between MBTs and ACVs in favor of ACVs, while preserving the aggregate ceiling for tanks and ACVs.

A second solution could be to restructure the existing ceilings among military districts, preserving aggregate ceilings for the Atlantic-to-Ural zone. Russian Defense Minister Pavel Grachev stated in March 1993 that, "Given the changed situation, new quotas are necessary. It will be needed to redeploy the armaments from one MD to another, preserving the total agreed upon level." But this would mean that the CFE Treaty implementation will face the difficult problem of how to take into consideration Russian concerns without renegotiating the treaty.

Apparently, Moscow military's preference is to renegotiate some provisions of the treaty. In particular, Deputy Chairman of the General Staff Valeri Zhurbenko came up with a proposal to transfer the North Caucasus MD from the flank zone to the rear zone, which is not limited by specific subceilings of CFE and is supposed to accommodate the forces in excess of other zonal sublimits within the overall levels. As a precedent, it was pointed out that the CFE Treaty had been already renegotiated to exempt the Baltic states

from the overall application area and the larger central zone (Zone 3) of the treaty. It was not surprising that Turkey was strongly against such a solution.

The situation with the flanks is becoming more complicated. After the October crisis in Moscow, the Russian military has gained a much greater role in decision-making, especially regarding defense and arms control policies. This took place against the backdrop of an obvious conservative shift in the government's domestic and foreign policies and continuing disarray and inconsistency in the operations of Yeltsin's administration. The initiatives being declared even by the president are often being "improved" or basically changed afterwards by Russian high-ranking officials. One of the examples was Yeltsin's "approval" of the prospective entry by Poland into the North Atlantic Treaty Organization (NATO).

As for CFE, in October 1993, President Yeltsin addressed other partners to the treaty with a special high-level message. This initiative was caused by "the deep concern over the destiny" of the CFE Treaty "in light of the basic changes in the military and political situation on the continent." Having criticized the treaty itself for its obvious discrepancy with the new situation in Europe, the president simultaneously assured the partners that Russia had made its "decisive political choice . . . towards the preservation of the integrity of the treaty." Nevertheless, he called upon the partners to solve an extremely urgent problem of the flank limitations of the treaty. This message contained a threat. That is, in case of an unfavorable solution to the flank problem, Russia "would be persuaded to undertake actions which would go beyond the flank limits."

To provide additional justification for its own military activity, Moscow is eager to present the situation as threatening the stability in the "broader European context." No matter how great the real threat is in every particular case, it should be noted that the United Nations (UN) and its institutions, organizations that have been involved in the European security process, are looking by idly at the bloody conflicts taking place in the southern and eastern parts of the former USSR. It is quite obvious that a more active UN and CSCE participation in the resolution of these conflicts and peacekeeping operations would be a better means to contain violence and restrict Russian neo-imperial activities there.

Addressing the Problem

There is every reason to expect growing problems with CFE treaty compliance in the next several years. These problems are likely to be created by the policies of Russia and other former Soviet republics, in particular Ukraine and the Trans-Caucasus states.

In the case of Russia, all five factors contributing to compliance controversies are operating.

- (1) the disintegration of the USSR and controversies among successor states;
- (2) the economic crisis and the lack of financial or technological resources in the CIS;
- (3) the disintegration of centralized political control over state and private organizations with vested interests in violating international agreements;

- (4) the active domestic political opposition to treaty implementation and compliance; and
- (5) the development of new threat perceptions and defense requirements that put into question the compatibility of compliance with national interests.

In this sense, CFE problems are unique and should be the major subject of concern. Their relative significance is changing, however, and will continue to shift in the future. Whereas in late 1991 and early 1992 the main problem was caused by the disintegration of the USSR, after the Tashkent Agreement of May 1992, it has been the economic burden of force reductions and domestic political opposition that created obstacles to smooth implementation of the treaty.

In the fall of 1993, after the defeat of hard-liners in the Russian parliament and the growing involvement of the Russian military in the Trans-Caucasus conflicts, new reasons for potential non-compliance have moved to the foreground. These are:

- The growing autonomy of the Russian military;
- The relaxation of political control in Moscow over the Ministry of Defense;
- The Ministry of Defense's military reform planning and involvement in regional conflicts; and
- The changing threat perceptions of the Russian security establishment, whether justified or camouflaging other motives.

The latter sources of possible non-compliance will probably be even more significant in the near-term. The deteriorating economy, budget deficits, and inflation may again raise the role of economic issues in countering treaty implementation.

Western policy might alleviate economic problems by providing some financial and technical assistance that could come in exchange for more comprehensive data on what is being done with troop reductions, restructuring, and redeployment in Russia. More thorough monitoring and verification procedures may follow to control the usage of foreign assistance. Since Russian ground forces will not be expanded under any circumstances but will continue to shrink due to economic reasons, some relaxation of treaty limitations on storage of TLE might alleviate the problems of weapons elimination, reduce the requirements for new production to equip the army, and provide grounds for additional monitoring provisions to verify storage.

The issue of flank limits is more difficult. The West's flat refusal to change CFE provisions would be viewed by Moscow as a manifestation of uncooperative policy and would consequently strengthen the hands of treaty opponents and the advocates for an anti-Western line and power projection in the "near abroad." Even if this shift does not undercut the treaty in the short run, during the next several years it might backfire and create great problems to prospects for a U.S.-Russian "Strategic Partnership."

It would be wise for the West to agree to the revision of some provisions of the CFE Treaty to accommodate changing Russian threat perceptions and problems of troop withdrawal and restructuring. This would hardly create a precedent for the future since the balance of power will remain so heavily shifted in favor of the West economically,

militarily, and politically. Actually, from the security point of view, Russia is much more interested in overall CFE implementation than the United States or Western Europe. Economically, Russia would not be able to sustain higher force levels in Europe than those allowed under the Tashkent quotas. In contrast, NATO could easily exceed CFE force levels, if duly motivated. Hence, if Russia discards the CFE Treaty to deploy more forces in the southern flank, the net balance of forces could be more disadvantageous to Russia.

At the same time in the course of renegotiating flank limitations, the United States and its allies may place new, numerically higher restrictions on Russian deployments in the flank areas. The West could also acquire more comprehensive information from the Ministry of Defense on undertakings and actions in the southern region, together with more efficient verification and accounting procedures. Besides, this might provide a good opportunity to draw the attention of Russian political authorities to the operations of the military institutions, their implementation of military reforms, and compliance with CFE and other treaties. This could also help to put the new military assumptions and perceived requirements under closer scrutiny and to encourage a more democratic and consistent policy-making process in Moscow.

In the long run, it would be necessary to supplement the CFE Treaty with new arms reduction arrangements. Otherwise, it will be less and less relevant to the new security environment and challenges in Europe, which are so much different than the 1980s and CFE guidelines elaborated at that time. If left on its own, the CFE Treaty would probably be undermined by new developments before the end of the 1990s. In particular, facing NATO across-the-board preponderance and fearing its extension to the East—to include Eastern Europe, the Baltics, and maybe eventually even Ukraine and Moldova in some form (like individual “Partnership for Peace” programs)—Russia might react in a very strong and aggressive way.

Several steps Russia can take would obviously look threatening to other former Soviet republics and former East European allies of Moscow, in particular, huge concentration of conventional forces in the Kaliningrad area and in the Moscow, Leningrad, and North Caucasus military districts (or Western, North-Western, and South-Western strategic directions, as they will be called under the new military doctrine). That doctrine’s emphasis on offensive (“counteroffensive”) capability, rapid reinforcement from the Ural and Volga second-echelon districts, and high tactical mobility and fire-power could also be of concern. This would create new tension and confrontation with the West, even if Russia’s forces do not exceed CFE limits. Alternatively, under the impact of threat perceptions and conservative pressure at home, Moscow might choose to discard the treaty altogether.

The CFE Treaty, like the START agreements, constitutes another example where implementation and enhancement of the past treaty requires follow-on steps. In the post-Cold War environment, states need to adapt the arms control network to the changing strategic and political reality and to capitalize on past achievements that were instrumental in bringing about these profound shifts in the first place.

A new approach might constitute a trilateral package of agreements:

- Further deep arms reductions in the European part of Russia;

- Restructuring the armed forces of East European states and former Soviet republics on non-offensive defense principles; and
- Follow-on reductions and limitations of NATO forces, along with commitments not to extend eastward the alliance's area of responsibility.

The Elimination of Nuclear Munitions

Yu. Pinchukov

In 1991 President George Bush announced a unilateral U.S. reduction and elimination of tactical nuclear weapons. A month later Mikhail Gorbachev followed suit. These unilateral measures imposed, for the first time, the task of eliminating several types of nuclear munitions and led to the development of Soviet-American cooperation in the field of the safe and environmentally harmless storage, transportation, and dismantlement of nuclear munitions.

The U.S. Congress allocated the first \$400 million to assist the Soviet Union's program to eliminate weapons of mass destruction. The outside world was worried whether Russia, as the internationally recognized inheritor of the nuclear arms of the USSR, could cope with the unique task of transporting over thousands of kilometers many thousands of nuclear warheads removed from weapons earmarked for elimination, in addition to storing, safeguarding and dismantling these nuclear warheads. An accident with even one of them would result in a serious environmental disaster, to say nothing of the danger of nuclear terrorism or sabotage.

Great concern was caused by the problem of utilizing hundreds of tonnes of highly enriched uranium (HEU) and plutonium extracted from the dismantled nuclear munitions. A "leakage" of even a few kilograms of these substances could lead to unpredictable consequences both in an environmental and a military sense.

The talks between Russia and the United States and other western states on aiding Russia to eliminate its nuclear weapons have already received the name of "cooperative denuclearization," and can be regarded as a new dimension of nuclear arms control. In 1992-94 several agreements were signed by the high officials and the heads of states from the United States, Russia, and Ukraine that cover the elimination of a considerable part of the former Soviet and the U.S. nuclear arsenals as well as both nuclear powers' fissile material production and use. As a result, this subject could also be studied from a perspective of implementation and compliance with the provisions of a completely new set of arms control agreements.

Strategic Aspects of the Deep Cuts in Nuclear Weapons

The existing Soviet-American and Russian-American agreements on the reduction and control of nuclear weapons, including Strategic Arms Reduction Treaty (START) I and START II, lay down in detail the procedures for the destruction and conversion of nuclear weapons' delivery vehicles and launchers. However, the order of destruction of nuclear munitions and the use of the nuclear materials extracted from them is not mentioned in these treaties, nor in any that preceded them in the field of nuclear arms control. As a result, even though the agreements may be fully implemented and observed, the actual quantitative level of nuclear weapons, including those in storage, may not be reduced before the expiration of their guaranteed service lifetime (10-15 years).

Nuclear munitions in storage depots could be regarded as strategic reserves which, in case of unforeseen circumstances, could be used for a rapid buildup and deployment of additional nuclear weapons.

Also, nuclear warheads stored in depots could be used for new weapon systems while the United States and Russia remain within the existing quantitative ceilings. Moreover, obsolete types of nuclear munitions were used as a source of costly nuclear materials for military purposes—highly enriched uranium-235 (U-235) and plutonium-239—as well as a source of other materials and components for the production of new types of munitions.

Since the quantitative build-up of nuclear arsenals, unlike their qualitative modernization, stopped in the United States in early 1980s, and in the USSR in late 1980s, the continuing production of nuclear materials for military purposes, from a strategic point of view, has long since become an anachronism and a pointless waste of resources.

The U.S. stopped producing highly enriched U-235 for military purposes in 1964 but retained a small facility for the production of fuel for the reactors of naval vessels. The production of plutonium was maintained in the United States in subsequent years for reasons other than strategic considerations (in particular, for the technological concurrence of plutonium production with that of a number of other strategic materials, in particular, tritium) and was finally halted in 1992.

The USSR announced complete cessation of the production of highly enriched uranium for military purposes in 1989. As for plutonium, in spite of a considerable reduction in its production, Russia is continuing production for the same reasons that motivate many military-industrial enterprises in Russia. A powerful industrial momentum impedes defense production from conversion to civilian manufacturing in Russia.

Moreover, the situation is even worse in nuclear material production than in the other branches of defense industry. Peaceful uses of nuclear weapon materials, especially plutonium, are very limited. The prospects for the wide-scale introduction of power reactors that burn plutonium as fuel are very bleak. Their construction, together with supporting facilities and plants, would need investment on the order of many billions of dollars. In the absence of a nationwide program of industrial innovation in Russia that could possibly give jobs to the qualified labor and industrial potential concentrated in the formerly “closed cities,” there is no answer to the question of what to do with the whole nuclear weapons manufacturing complex.

This deadlock reinforces those political forces in Russia that still look at nuclear weapons as necessary and as the most powerful component of Russia’s military might. Continuation of the plutonium production, from their point of view, is necessary to give jobs to many thousands of defense employees as well as to preserve defense production capacity. In addition, there is speculation that Russia will continue to need “fresh” plutonium in order to replace aging weapons.

“Fresh” weapons-grade plutonium consists of at least 93 percent Pu-239 isotope, but it also contains other isotopes such as Pu-240, Pu-241, and Pu-242. Pu-241 slowly decays into americium with a large neutron capture cross-section. The accumulation of americium may also result in substantial changes in the thermal balance of a nuclear

device, rendering warheads unusable for a period of 10–15 years. The United States probably solves this problem by recycling old material, chemically extracting impurities. According to non-official experts, the way in which Soviet/Russian manufacturers have been dealing with this problem is by simply diluting the “old” plutonium with freshly produced plutonium.

In the view of the authors, the continuation of plutonium production at a time of radical reductions in nuclear arsenals cannot be justified by either military or international political considerations. Nor can it be justified by references to doctrinal propositions from the days of the Cold War when this production process was started. At the same time, it is clear that conversion requires the solution of a number of complex scientific-technical, economic, and social problems as well as enormous capital investments, the greater part of which should be used to clean up the environmental damage caused by decades of operating these production facilities.

The question of whether nuclear weapons should continue to be produced, developed, and tested lies outside the scope of this chapter. The answer is closely linked to the elaboration of new U.S. and Russian strategic doctrines, which still seem to rely on nuclear deterrence. (In the case of Russia, this reliance apparently is being enhanced by backing away from the Soviet no-first-use declaration of 1982.) Nonetheless, two things are clear. First, the low ceilings on strategic nuclear forces established for Russia over the next ten years by the START II Treaty and by unilateral reductions of tactical nuclear forces would permit a complete secession of the production of fissile materials for military purposes. Second, Russia is receiving assistance from the other nuclear powers directed at enhancing the safety of its nuclear arsenal and speeding up the dismantling process of a considerable part of it.

These facts, combined with secrecy which still accompanies nuclear cooperation between former adversaries, presume negative consequences for the implementation of the agreements on foreign assistance in dismantlement. One problem results from uncertainty about the real size of the former Soviet nuclear arsenal. Because the financial assistance is roughly proportionate to the quantity of the nuclear warheads to be dismantled, there are concerns that MINATOM, the Russian Ministry of Atomic Energy, will try to intentionally increase the stockpile size, or at least to create as much uncertainty about its size as possible. Possibly, at some stage of “cooperative denuclearization,” an exchange of exact figures about the size of nuclear arsenals is inescapable. The best approach would be an international agreement banning weapons-grade materials production as well as further steps toward expansion of the international controls over weapon materials production facilities of the nuclear weapon states. Hopefully, President Yeltsin’s initiatives to this effect in his United Nations (UN) speech in September 1994 would facilitate such endeavors.

A small portion of the existing stockpile of weapons-grade uranium and plutonium, including that residing in withdrawn warheads, is sufficient for the limited production of new munitions and for the minimal modernization of strategic and tactical nuclear forces. These modernization programs would be severely curtailed any way in view of the disastrous economic situation in Russia. Existing production capacities of nuclear munitions plants are sufficient for large-scale warhead dismantling and reprocessing

activities, provided that there is sufficient commercial demand and storage capacity for uranium and facilities and methods of safe handling of plutonium.

Possibly driven by such considerations, President Yeltsin declared in January 1992 that the reactors for the production of weapons-grade plutonium would be shut down by the year 2000. He confirmed the proposal to the United States to reach agreement on a monitored cessation of the production of fissile materials for weapons. In July 1992 the Bush administration announced that the United States undertook an obligation not to produce weapons-grade plutonium and HEU. In spite of being largely symbolic—the United States had not produced HEU since 1964 and ceased plutonium production in 1988 because of environmental concerns—this announcement was a form of invitation to Russia to sign a verifiable bilateral agreement on this matter in the future.

The U.S.–Russian cut-off agreement, covering the production of unsafeguarded plutonium, was signed in March 1994. Russia assumed an obligation to shut down the three remaining dual-use defense reactors (two in Tomsk-7 and one in Krasnoyarsk-26) by 1995 as long as the United States assisted Russia in providing nearby populated areas with alternative sources of thermal energy.

Cooperation on Nuclear Weapons Dismantling

The initiative taken by the United States, other western countries, and Japan to assist Russia in the safe dismantling of nuclear munitions and their transportation from deployment areas to the processing plants and central storage depots, represents a unique new element in nuclear disarmament. It is based on the understanding that the main condition for the effective and irreversible implementation of radical nuclear disarmament is the actual destruction and utilization of all the components of nuclear weapons, including fissile materials.

In June 1992, Yeltsin and Bush signed an “Agreement between the Russian Federation and the USA with respect to the safe and reliable transportation, storage, and destruction of nuclear weapons,” which provides for technical and financial aid to Russia from the United States. An agreement on technical assistance in the construction of a protected and environmentally safe storage depot for fissionable materials, withdrawn from the destruction of nuclear munitions, was also concluded at that time. As a follow-on, an agreement on the use of highly enriched uranium extracted from nuclear munitions was signed on February 18, 1993, in Washington.

In the Vancouver declaration of the U.S.–Russian summit on April 3–4, 1993, it was affirmed that “the United States and Russia intend to cooperate, on the basis of their mutual interest, in environmentally safe elimination of nuclear forces pursuant to relevant arms control agreements, in construction of a storage facility for nuclear materials and in the controlling, accounting, and physical protection of nuclear materials.”

None of these agreements constitute an international treaty obligation. The obligation to dismantle a large part of tactical nuclear munitions was unilaterally assumed and was, in fact, a declaration of intent. (The START I and START II treaties do not provide for any procedures for the dismantling of nuclear warheads from the strategic weapons to be reduced, nor do they establish any verification regime for this process. Both Russia

and the United States remain, as before, completely free to develop, produce, and deploy various types of nuclear weapons.

It has taken a fundamental revision of political and strategic relationships between the two former rivals, as well as concerns on the part of the West about safety of the nuclear arsenals of the former Soviet Union, to have brought such technical cooperation and assistance. This new phase in nuclear arms control differs strikingly from previous ones, when all questions of limitation and elimination of various nuclear weapon systems were "symmetrical" and based on strict reciprocity and reliable verification procedures. On the other hand, it is also clear that this new phase in relations has only just begun. Many additional agreements relating to the production infrastructure have yet to be worked out.

Rough estimates place the size of the nuclear arsenal of the former Soviet Union at 30,000 munitions. (An alternative figure from MINATOM is 45,000.) The guaranteed period of their use was 10–15 years. Under this assumption, it was necessary under conditions of confrontation and an arms race to dismantle 2,000–3,000 warheads every year, with comparable production of new warheads on an annual basis.

In view of the forthcoming START I and START II reductions of several thousands of strategic nuclear warheads, and of an even greater number of tactical munitions to be withdrawn, the number of newly produced munitions to replace obsolete ones is to fall considerably. As a result, the dismantling rate could be stepped up to 3,000–4,000 units per year were it not for safety provisions for the dismantling and storing of fissile materials. According to some authoritative sources, at the Arzamas-16 production facilities, even the present dismantling rate (that is before implementation of the START I and START II treaties) creates violations of environmental safety standards. At present there is in Russia a great shortage of specialized storage facilities, which may lead to bottlenecks. Another issue is the cost of dismantling, which is apparently much lower than assembling, but which may be financially draining.

Another problem arises from the transportation of nuclear munitions earmarked for dismantling. Assuming that 3,000–4,000 units will have to be sent to the plants yearly and that the average load of a convoy amounts to 50 warheads, this means that 60 to 80 convoys will be needed every year. Since it may take from three to five days to reach its destination, every day one to two convoys and fifty to one hundred nuclear warheads will be moving on the railroads of Russia carrying uniquely dangerous freight. Bearing in mind the increased accident rate on Russian railroads (on the average serious accidents happen once a week), the problem of safely transporting nuclear munitions should be a matter of great concern. Apparently, transportation is the weakest link in the circuit of nuclear munitions elimination.

The problem of assuring the physical protection of nuclear munitions, nuclear materials, and components is not new. High resistance levels against explosion and fire and the mechanical reliability of nuclear munitions have always been highly important military-technical requirements. There have nevertheless been some cases of accidents with nuclear warheads which have, however, never resulted in a nuclear explosion or the start of a chain reaction. Safety precautions for the transportation of nuclear munitions include the use of special reinforced containers, railway trucks of a special

construction, armored trucks, accident alarm systems, detection devices, radio communications, and employment of specially trained personnel.

The dismantling process can hardly start immediately upon arrival at the facility. Nearby storage sites must be of sufficient size and equipped with reliable monitoring and security and protection systems. The materials extracted from the dismantled munitions, especially highly enriched uranium and plutonium, will also need specially equipped storage depots protected against unauthorized entry and natural elements such as fire and flooding. All this will require substantial expenditures. According to some western estimates, the storage of one gram of plutonium costs one dollar per year or one million dollars per tonne. The amount of highly enriched uranium to be extracted in Russia is estimated at 500 tonnes in addition to 100 tonnes of plutonium.

According to statements made by MINATOM in 1992, the factor which limits Russia's capability to dismantle nuclear munitions in accordance with the Gorbachev plan is not the lack of the necessary production capacities, but a shortage of storage depots for the plutonium and uranium extracted in the course of dismantling. Under its unilaterally assumed obligations, Russia should dismantle, by the year 2000, more than 10,000 tactical nuclear munitions. The dismantling of strategic warheads under the START I and START II treaties would further aggravate the shortage of storage facilities.

Russia is receiving assistance from the other nuclear powers directed at enhancing the safety of its nuclear arsenal and speeding up the dismantling process of a considerable part of it. Presidents Bush and Clinton have offered financial and technical assistance in building and equipping the necessary storage depots in Russia, as mentioned in the Vancouver Declaration. In addition, the United States is to send special containers to Russia for the safe transportation and storage of nuclear munitions, plutonium, and uranium; communication and diagnostic equipment for their control; and bullet-proof Kevlar coverings for their protection during transportation. The manufacture of special railway trucks is also being discussed. Great Britain has offered to send its own armored cars for the transportation of nuclear munitions and materials while France proposed to supply protective containers for their transportation and storage.

In March 1994, Russian and the American officials signed an agreement establishing procedures for the on-site inspection of the storage sites containing plutonium components of the dismantled nuclear weapons. Russian inspectors will receive access to the U.S. storage facilities of the Pantex plant, and the U.S. teams of inspectors will be visiting corresponding sites in Russia.

Cooperation in the Utilization of Highly Enriched Uranium

At present the main element of "cooperative denuclearization" is perhaps the sale of Russian HEU to the United States. As a result of ongoing and envisioned nuclear disarmament, an enormous surplus of enriched uranium is emerging in Russia. In view of economic limitations and agreed and unilateral numerical ceilings on nuclear weapons, this surplus will not be recycled for the production of new nuclear munitions. The same reasons account for the surplus of production capacities for the processing of natural uranium and its enrichment.

According to available sources, the aggregate capacity of the uranium enrichment plants in Russia amounts to a maximum of 13 million separative work units (SWU) per year. The maximum enrichment capacity in the United States amounts to 16.5 million SWU per year. Converted into HEU equivalent, this means that the United States is able to produce 85 tonnes of uranium for military purposes per year. Russia is able to produce up to 65 tonnes. The United States stopped the process of HEU production for military purposes in 1964 and, according to non-governmental sources, has a stockpile of 500-550 tonnes. The estimates for Russia are less exact, but it is believed that it has a stockpile between 520 and 920 tonnes.

At the same time the United States accounts for about 50 percent of the world market of enriched uranium sold for atomic power stations. A further 40 percent of the world market of enriched uranium is accounted for by two European concerns. According to estimates by Russian "Technosnabeksport," Russia's share in uranium and uranium products amounts to only 6-7 percent of world trade. This is mostly explained by the fact that the USSR made its appearance on the world uranium market very late, in 1990. Until that time the bulk of natural uranium and uranium products was destined for home consumption only, i.e., for the buildup and modernization of the Soviet nuclear arsenal and for the fuel supply of the atomic energy industry of the Soviet Union and allied states of Eastern Europe.

The small foreign outlet for the present Russian surplus uranium stockpile and production capacity is further aggravated by a drop in atomic energy production in Russia and the Commonwealth of Independent States (CIS) countries. At the same time, the prospects are not encouraging for the construction of new nuclear power plants that use low enriched uranium (LEU) on the territory of the former USSR. In other words, Russia's huge and modern atomic energy industry does not have enough contracts for its products to enable it to go on existing on the same footing as in the former USSR. The extraction of uranium and the production of uranium products and plutonium, as well as conversion of this industry, require the solution of numerous social problems (especially retraining and relocating labor and providing new housing and jobs) and huge investments. In a number of cases, the halting of the nuclear production process means the loss of expensive technological equipment, qualified personnel, and energy supplies for large communities.

For the Russian nuclear fuel industry to survive it has no other choice—after the halting of uranium production for military purposes—but to penetrate foreign markets. But the prospects for this are, to put it mildly, not very bright. The atomic energy industry of the former USSR received contracts from Great Britain, France, Sweden, and Finland for the re-processing of "dirty" uranium extracted from the spent fuel of their atomic power stations for the purpose of using it again. But the volume of sales of natural and enriched uranium on the world market has been too small for an industry with such capacity.

The matter is further complicated by the fact that the world nuclear power industry is passing through a prolonged phase of depression. The construction rate of new reactors is extremely low. Thus, in 1992 only three reactors were being built in the United States while it is likely that only one of these will be put into operation. Great Britain has announced a moratorium on the building of new reactors. In Germany no new reactor

has been put into operation since 1989. There are only two countries in the world which intend to continue to expand their nuclear energy industry—Japan and Finland. As a result, the demand for uranium fuel for existing atomic power stations can be fully satisfied by traditional suppliers. (The financial disorder in Russia has led to an absurd situation in which Russian state-owned nuclear power stations do not have money to pay for fresh nuclear fuel from the state LEU production industry.)

When conditions of demand for nuclear fuel on the world market are flat, the only way to attract potential buyers is to sell at prices that are considerably below the world price. This is what Russia had been trying to do, but it is quite naïve to suppose that western competitors would permit significant quantities of cheap natural and enriched uranium to be offered for sale on the world market. The low price of uranium and uranium products exported by Russia and justified by the low exchange rate of the ruble has provoked, in 1991, the United States and a number of other western countries to adopt a series of protectionist measures. The United States has fixed a high tariff on natural uranium and uranium products imported from CIS countries and established special quotas, which make it quite unprofitable to sell these commodities on the U.S. market in significant quantities.

For all of the above reasons, the U.S. offer to purchase Russian HEU, extracted from dismantled nuclear warheads, was extremely attractive to MINATOM, which controls an enormous nuclear industry. The resulting agreement on the HEU sale, which was signed by Russia and the United States in Washington on February 18, 1993, stipulated the principles of economic and technical cooperation between the two nations on the processing of HEU and LEU for use as fuel in nuclear reactors. The United States was committed to purchase LEU obtained from the processing of HEU or (by specific agreement of the two sides) an equivalent quantity of HEU from Russia. This material was to be sold to users in the United States for commercial purposes, with information provided to Russian authorities. In its turn, Russia assumed the obligation to process 10 tonnes of HEU yearly over the first 5 years and, subsequently, 30 tonnes per year for the following 15 years. Altogether, in accordance with this agreement, Russia had to process a total of 500 metric tonnes of HEU extracted from dismantled nuclear weapons.

The United States did not undertake to purchase guaranteed quantities of LEU and HEU. Moreover, Article V of the agreement stipulated that the activities of the U.S. government would be subject to the availability of U.S. government funds. In its turn, the Russian government was given the option to obtain funding for implementation of the agreement from any private U.S. company (Article V). In other words, the agreement, while establishing for Russia yearly minimum quotas for the processing of HEU (no less than ten tonnes a year over the first five years), did not compel the United States to purchase all this uranium.

Russia could, in accordance with this agreement, sell its uranium to any U.S. private company for commercial use. It removed, as it were, this trade channel in uranium products from the effect of protectionist measures established by the United States on prior contracts for the supply of “conventional” Russian uranium. The formulation of the agreement was too vague, however, to allow any definite conclusions. It was proposed, in particular, to use Russian LEU, processed from HEU, in such a way

as to “minimize disruption in the market and maximize the overall benefit for both parties” (Article V).

Obviously, the “dumping” of large quantities of Russian enriched uranium on the American market may lead to a lowering of the price. By a more protracted and smooth entry into the uranium market, the Russian side will evidently not be able to count on large, one-time profits from the sale of HEU. At the same time, the processing of HEU and LEU, in the quantities that Russia has committed itself to under the February 18, 1993, agreement will require in all probability considerable investments. The only source of new investments in nuclear production could be foreign or domestic private companies. All this points to a new trend towards growing and multifaceted “commercialization” of the previously secret nuclear industry.

Cooperative Denuclearization and Implementation

The potential implementation problems with respect to nuclear warhead dismantlement and uranium utilization are quite unique among other areas of potential compliance controversies. Treaty non-compliance is not an issue as there are very few formal agreements that might directly be violated.

On the other hand, complications and mutual recrimination between Russia and the United States on “cooperative denuclearization” may affect Russian warhead dismantling, uranium processing, and nuclear export practices and in this way create compliance problems with a number of major treaties, in particular START II and the Non-Proliferation Treaty (NPT)—and International Atomic Energy Agency (IAEA) regulations.

Directly, problems with implementation may occur with some provisions of the U.S.–Russian “cooperative denuclearization” agreement. One of them is verification procedures and systems to ensure that uranium before or after dilution is indeed extracted from dismantled warheads, and not just borrowed from LEU or HEU stockpiles produced by the Russian nuclear enrichment industry to keep it in business. Disintegration of centralized political control over the military and defense-industrial bureaucracy might be conducive to such “interpretations” of the U.S.–Russian agreement.

On the other hand, too intrusive a verification system that would not be reciprocal would provoke strong opposition from the Russian military, nuclear industry, and a broad spectrum of domestic political groups, including factions in the new parliament. After the October crisis and December elections of 1993, Russian political leadership would not be in a position to challenge those domestic groups.

One solution might be provided by the application of chemical and physical methods to samples of stockpiled uranium in order to distinguish “old” weapons uranium from uranium newly produced by enrichment facilities. Another area of potential implementation problems might relate to shortages of foreign investments into reprocessing facilities and U.S. failure to buy the agreed amount of Russian uranium, resulting in MINATOM’s attempts to sell at dumping prices and U.S. imposition of anti-dumping quotas.

Yet another subject of serious tensions with political and military ramifications could stem from Ukrainian attempts to sell uranium directly to the United States from nuclear warheads of Intercontinental Ballistic Missiles (ICBMs) and Air-Launched Cruise Missiles (ALCMs) located on its territory. This might follow from a failure of Kiev and Moscow to resolve the issue of financial compensation for elimination of nuclear weapons in Ukraine, and, in a more general sense, from the renewed controversies over the removal of nuclear weapons from Ukraine and Kazakhstan.

Since in Ukraine and Kazakhstan there are no facilities for dismantling nuclear munitions and processing uranium, those republics might decide to build such facilities on their territory or sell the warheads to the United States for dismantling and processing. The first option would deal a serious blow to the NPT regime since these facilities would be capable also of enrichment of uranium and assembling nuclear weapons. The second would deeply compromise the most delicate and secret military technology and would be unequivocally perceived by Russia as a hostile act and anti-Russian conspiracy on the part of Ukraine and the United States, with all ensuing consequences for political and strategic relations, including compliance issues.

The U.S. position on this issue should exclude any possibility of either dismantling warheads in Ukraine or exporting them outside the former USSR, in order to avoid the most dire consequences for the NPT regime and compliance with other arms control treaties. Unwise policy on these subjects on the part of the United States would provide the best imaginable pretext for Russian nationalists and hard-liners to discredit the whole arms control network between Russia and the West.

Finally, because of its unreciprocal character, the "cooperative denuclearization" program may create a sense of humiliation and of unilaterally selling out Russian security, which would be used by Russian nationalists to undercut security cooperation with the West. This might be mitigated if some additional agreements on diluting U.S. weapons-grade uranium at Russian facilities were reached to emphasize the reciprocal nature of nuclear disarmament and Russian assistance to U.S. conversion of fissile materials for peaceful uses.

Under the Moscow Trilateral U.S.-Russian-Ukrainian Declaration of January 14, 1994, Ukraine has assumed international commitments to divest itself of Soviet nuclear weapons and join the NPT as a non-nuclear weapon state. Ukraine is under international obligations to withdraw to Russia all nuclear warheads located on its territory with the goal of dismantling and eliminating them in return for HEU reactor fuel (on the understanding that Ukraine would place its reactors under IAEA safeguards). Russia would transport warheads and Ukraine would provide security for the warheads while they are in Ukraine.

Actual implementation of the Trilateral Agreement has already started: the first of two trains carrying strategic nuclear warheads crossed the border on its way to Russia in early March, 1994. Nonetheless, this agreement has also created additional problems in connection with new claims from Ukraine, Belarus, and Kazakhstan to Russia to get compensation for nuclear materials contained in tactical nuclear weapons that have already been removed from their territories. The Russian reaction was negative. Moscow

insisted that it had already spent “millions of dollars” for the transportation of these weapons and their storage and dismantlement.

Some follow-on steps to the Moscow Trilateral Declaration would be useful to keep Ukraine (and indirectly Kazakhstan) steadily on the non-proliferation course and to help them to abide by commitments to be non-nuclear weapon states. Russia should provide Ukraine with reliable access to nuclear reactor fuel (LEU, diluted from the HEU of dismantled warheads or freshly produced for use in Ukrainian power plants). Russia should store plutonium from the warheads withdrawn from Ukraine and pay Ukraine, if, in the future, the two states find ways of receiving profits from separated plutonium. Russia may also compensate Ukraine by providing services for storage and/or reprocessing of the spent fuel from the Ukrainian nuclear power plants.

Ukraine and some other CIS states possessing still unsafeguarded nuclear power plants and nuclear research facilities should provide effective control over them. Russia, the United States, and the IAEA must address this problem and make arrangements to help to close this potentially very dangerous loophole in the existing non-proliferation regime.

Western cooperation and assistance continues to be crucial in facilitating Russian maintenance of effective long-term control over former Soviet nuclear assets and “dual use” technology, ensuring precise accounting of warheads, plutonium, and uranium components in storage; dismantling and utilization of nuclear munitions; and non-military utilization of materials.

Chemical Weapons Convention

A. Kaliadine

One of the few bright spots concerning the prospects of chemical weapons (CW) elimination is the fact that all former Soviet chemical weapons stockpiles as well as all facilities for their storage and production are located only on the territory of Russia. Nevertheless, this issue is on the agenda of relations among former Soviet republics.

In accordance with the Agreement on Chemical Weapons, signed in Tashkent on May 15, 1992, by nine former Soviet republics (with the exception of Ukraine and Belarus), the parties agreed to cooperate in the destruction of chemical weapons and to carry out agreed policies in respect of the control of the export of "dual purpose" chemical agents that are produced for peaceful purposes but could be used for the manufacture of chemical weapons. Common policies were to be agreed on for the manufacture of dual-purpose chemicals as were policies to consult with each other on all questions related to the prohibition of chemical weapons (Article V). Furthermore, Russia assumed the obligation to destroy the chemical weapons stockpile of the former Soviet Union in accordance with international agreements, taking into account Russian capabilities (Article IV).

The Tashkent document also provides for the conclusion of a separate agreement to regulate questions of the participation of the Commonwealth of Independent States (CIS) in expenditures incurred from the destruction of the chemical weapons stockpiles of the former Soviet Union. Such an agreement, however, has so far not been signed, although financial problems of chemical disarmament have acquired even greater urgency in view of the completion in 1992 of the Chemical Weapons Convention (CWC).

Since January 1993, the representatives of 154 states including the Russian Federation have signed the CWC, thus providing a legal foundation for ridding the world of existing chemical weapons and their production facilities and eliminating a whole category of Weapons of Mass Destruction (WMD). In addition to Russia, all other former Soviet republics with the exception of Uzbekistan signed the CWC.

The comprehensive chemical warfare control regime, provided for in the CWC, is designed to achieve two principal operative objectives: to destroy all chemical weapons declared by states-parties and, in most instances, their chemical weapons production facilities (with the exception of some facilities to be converted into those for destroying chemical weapons or for agreed civil industrial operations); and to prevent the production and proliferation of new chemical weapons by monitoring chemical industry. The success of the CWC regime will largely depend on ensuring the following:

- The destruction of existing CW stockpiles;
- The prevention of the production and of the geographical proliferation of new chemical weapons;
- The dismantling or conversion of CW manufacturing facilities; and

- The availability of the funds necessary to cover the costs of demilitarization and related verification activities. This fully applies to Russia.

The complexities of the CWC are such that without national implementation measures states-parties will never be able to fully comply with all the obligations of the convention. Given the huge size of Russian CW stockpiles and the role its chemical industry plays in international trade in chemicals, national implementation measures of the Russian Federation (RF) are of the utmost importance for the success of the CWC.

National Implementation Measures

It should be noted that prior to the ratification of the CWC Russia as a signatory state has undertaken important preparatory work not only to demonstrate its political will to ensure compliance with the provisions of convention but also to create the legal, administrative, and technological frameworks necessary for implementation.

According to the Federal Treaty and the new Constitution of the RF, questions of war and peace and, in particular, matters related to international conventions are delegated to the competence of Federal authorities. In practice, however, the development and acceptability of measures toward chemical disarmament became largely dependent on the attitudes of the republics and regions concerned. As their positions of strength vis-à-vis the Federal center were growing in 1992–93 (at least until the October crisis in Moscow), they were able to pursue their local interests more vigorously and demand greater and greater financial and other concessions from the Russian Federal authorities. Concessions were demanded both for the acceptance of governmental projects for chemical weapons destruction and utilization, and for transportation of toxic substances through their territories.

Federal authorities adopted a number of specific measures in preparation for the destruction of stockpiles of toxic substances. A committee on matters pertaining to the Chemical and Biological Weapons conventions, attached to the presidency of the Federation, was set up. This committee was charged with organizing the implementation of Russia's international obligations on the destruction of chemical weapons.

In early 1992 the Supreme Soviet of the Russian Federation adopted a resolution on Russian compliance with its international obligations related to chemical weapons. Special instructions were issued by President Yeltsin on priority measures for meeting these obligations, authorizing development of the social infrastructure, and improving the financial and social conditions of the population in the districts where the chemical destruction facilities were to be located. A program of research and construction activities was initiated for the development of the destruction of chemical munitions. Due to the power struggle between the president and the former Supreme Soviet, it was impossible to enact special legislation concerning destruction of chemical weapons and other measures relevant to the convention. This subject has been considered by the newly elected Parliament. Concrete legal measures are to be adopted by this body, initially on CW destruction and on the social defense of the population in the areas where the CW destruction facilities are to be built.

Compliance Issues Related to the Destruction of Russian CW

In accordance with the CWC, two years after its entry into force, the states-parties (presumably in 1997) will have to start destroying CW. The timetable laid down by the convention provides for the destruction of 1 percent of the chemical weapons stockpile after three years, 20 percent after five years, and 45 percent after seven years. By the end of the tenth year after the convention's entry into force (approximately by the year 2005), all stockpiles of chemical weapons must be eliminated. The convention provides for the possibility of individual states-parties to prolong the period of the destruction process up to 15 years if these states are not in a position to complete the destruction within the ten-year period. Permission for the prolongation of the period of destruction is to be granted by the international organization and will be set up in accordance with the convention. The state that does not fulfill its obligation to destroy CW within the established period of time will be responsible for bearing the costs of the international verification of the stockpiles of chemical weapons remaining after the ten-year period and of the facilities for their destruction.

It should be noted that the USSR has assumed certain commitments with regard to the CW destruction schedule under the bilateral Soviet-American agreement on chemical weapons of June 1, 1990. That schedule envisaged the completion, by no later than June 1, 1997, of the testing of the first destruction facility and the start of the destruction process; the destruction of not less than 1 percent by no later than June 30, 1998; and the destruction of all chemical weapons down to a residue of 5,000 tons of toxic substances by no later than June 30, 2000. Russia has confirmed its willingness to implement this agreement subject to changes in the agreed destruction schedule, in consultation with the American side. A stage-by-stage timetable was to be agreed upon in U.S.-Russian negotiations, to be included in the Additional Protocol to the agreement of June 1, 1990 (so far unratified). Russia has concluded that, in view of the pressing demands on its resources, it cannot destroy its stocks within the earlier agreed schedule without outside financial assistance.

Stockpiles of chemical weapons in the RF consist of munitions for delivery by aircraft, missiles, and artillery filled with toxic substances as well as such substances stored in containers. According to official Russian data, its aggregate quantity of chemical weapons by weight of toxic substances amounts to 40,000 tonnes. The distribution of the stockpile according to storage methods is set out in the following table.

Table 1: The distribution of stockpiles of chemical weapons according to storage method

Type of toxic substance	Stored in Munitions and Devices	Stored in Containers
VX	100%	—
Sarin	100%	—
Soman	100%	—
Mustard Gas	—	100%
Lewisite	10%	90%
Lewisite/Mustard mixture	2%	98%
Phosgene	100%	—

There are presently stored 32,300 tonnes of phosphor-organic toxic substances; 7,700 tonnes of mustard and lewisite and their mixtures; and 5 tonnes of phosgene. All stockpiles of chemical weapons are stored in seven special arsenals of the Ministry of Defense of the Russian Federation.

As was reported, CW storage sites are located in the Pensa, Saratov, Briansk, and Kurgan regions as well as in Udmurtia, which at present has the status of a sovereign republic of the Russian Federation. In Kambarka (Udmurtia) 6,600 tonnes of lewisite are stored—the largest stockpile of this chemical agent in Russia. In Kizner (Udmurtia) and Ischugi (Kurgan region), artillery and jet-propelled projectiles as well as mortar mines with phospho-organic substances are stored. (Sarin, soman, and VX amounting to a total volume of 8,800 tonnes of toxic substances.) In the settlement of Gorki (Saratov region), about one tonne of lewisite is stored as well as stockpiles of mixtures of mustard gas and lewisite.

Nearly all of the storage sites of toxic substances are located in the vicinity of densely populated urban areas. As towns expand, they come closer to these sites. Nearly ten million people live within a radius of 100 kilometers (km) around the storage sites. This creates great problems in implementing safe and environmentally acceptable destruction of chemical weapons near densely populated areas or in transporting huge amounts of toxic substances by accident-prone railroads—averaging one accident a week—running through urban-industrial centers.

Preparations for the large-scale destruction of chemical munitions began in 1986, with the construction of the first experimental industrial destruction facility in the Chapayevsk district (Samara region). However, this facility was not put into operation because of strong opposition on the part of the local population concerned about potential detrimental medical and ecological consequences of demilitarization activities. It was converted into an instruction center for personnel engaged in the destruction of military toxic substances.

In 1990 the Ministry of Defense, together with other governmental departments, worked out and submitted to the Soviet leadership a state program for the destruction of chemical weapons. However, no decision on the implementation of this program was taken by the leadership of the former USSR. As a result, by 1992 the Russian Federation did not possess any specialized industrial base for the destruction of the accumulated stockpiles of chemical munitions.

At the end of 1992, a draft program for the destruction of chemical weapons in the Russian Federation was submitted by the committee established to report on matters pertaining to the Biological and Chemical Weapons Conventions. The draft program covered a broad range of issues related to the implementation of the CWC. It envisaged building all the infrastructure necessary for CWC implementation, including sanitary-decontamination installations and three chemical destruction facilities in the Chuvasia, Udmurtia, and Saratov regions. It also included the establishment of a personnel training center and a national verification center. The program contained provisions for scientific research and development of destruction technology, on safety measures during transportation of chemical munitions, and on the improvement of economic and social conditions in the districts where the destruction facilities were to be located. Approval

of the program by the Supreme Soviet would have provided the legal basis for the ratification of the CWC by Russia.

However, practical solutions proposed in the draft program failed to win the support of the broad public, especially in the republics and regions affected by the CW destruction activities. The draft was criticized, in particular, for failing to take into account concerns of those republics and regions on the health and ecological consequences of the operation of CW destruction facilities and the transportation of chemical toxic munitions to the sites of their dismantling and utilization.

At the hearings in the committees of the Supreme Soviet and in the mass media, concerns were also expressed about the lack of measures for the restitution of the health of the population affected by production of toxic substances as well as about the state of destruction technology and the anticipated high costs of inspection activities.

The coup de grâce to the draft program was dealt by the legislation passed by the Chuvasian Republican Parliament forbidding both the transportation of chemical weapons through its territory for the purposes of destruction and the construction of a full-scale CW destruction facility in Novocheboksarsk (near the republic's capital), in place of the converted CW production plant.

Having encountered political and technical difficulties in carrying out the above program for CW destruction, the Federal government had to revise its policy on the preparation for implementation of the CWC. In August 1993, a State interdepartmental commission was set up for the selection of sites for the construction of CW destruction facilities. The commission was authorized to elaborate—in close consultation with interested republics and regions—practical proposals for the president on this matter. By spring 1994, the commission had not yet finalized its work. It still has to harmonize the various interests of the ministries, other governmental agencies, local administrations, and the affected populations of the regions. The main issue appears to be where destruction facilities are to be built (near the CW storage sites or elsewhere). Upon the solution of this problem a new proposal will have to withstand an environmental impact assessment as well as close parliamentary and public scrutiny.

Compliance with the Non-Production Commitment

As a general principle, under the convention, CW production facilities are to be closed and destroyed. Destruction of CW weapons production facilities shall begin no later than one year after the convention enters into force and must be completed over a period of five years. The destruction of facilities producing Schedule 1 chemicals must be completed through three destruction phases within ten years after the convention's entry into force. Some specified production facilities may be temporarily converted for the destruction of chemical weapons. Such a converted facility must be destroyed as soon as it is no longer in use for destruction of chemical weapons. In exceptional cases of compelling economic need, a production facility may be converted into one for agreed industrial operation, subject to verification.

The decision to terminate production of chemical weapons was taken in the USSR in 1987. The chemical weapons production facilities were either closed or converted for civil industrial operations. The government of Russia, as the successor to the USSR, has

continued this policy. According to some reports, Russia had already converted its former CW production facilities to civilian use and hence did not need to destroy them. Since the decision not to resume the production of chemical weapons was a unilateral commitment, no international monitoring was involved. However, it has been in the interests of the Russian government to strengthen confidence abroad in the implementation of this commitment. Thus, specialists from the United States have been allowed on several occasions to visit former Russian CW production facilities.

It should be noted that dissident chemists Vil Mirzayanov and Lev Fedorov, in articles published in the Russian press in 1992–93, had on several occasions accused the chemical-military complex of wanting to preserve and upgrade the production of binary weapons. These accusations provoked heated discussion in the press and awkward reactions on the part of the authorities responsible for state security and even led, at one point, to the arrest and court proceedings of Mirzayanov on charges of revealing state secrets. However, under domestic and foreign pressure, the authorities had to drop this case. The incident served to throw additional light on the problem of compliance with the ban on the development of new chemical warfare substances. In this connection, it should be stressed that, although the CWC bans the development of such new substances, it lacks provisions for verifying this ban. This problem has to be addressed during further consultations.

The Russian military has not admitted the validity of the accusations and asserted that Russia had not at any time since 1987 resumed the production of chemical weapons. In February 1994, the Chief of the General Staff, General-Colonel Mikhail Kolesnikov, felt it necessary to point out in a February 6, 1994, interview given to the Army newspaper, *Red Star*, that the production of chemical weapons has never been resumed and CW stockpiles have not been replenished or renewed.

In cases when doubts about compliance with the non-production or non-development provisions of the CWC are expressed, these could be dealt with along the same lines that were agreed upon between Russia, the United Kingdom, and the United States on matters of compliance with the Biological Weapons Convention (BWC). For example, visits can be carried out to former CW production facilities to remove ambiguities; information can be provided on request about dismantlement or conversion accomplished to date; and cases of concern can be investigated. Action can also be taken under bilateral Russian–U.S. accords on the control of chemical weapons and the destruction of stockpiles. Of course, when the CWC enters into force, the Russian chemical industry will be fully subjected to the international monitoring procedures provided in the convention, including initial and annual declarations for plant sites, and routine and challenge on-site inspections.

It should be stressed that a number of factors work against the resumption of the production of chemical warfare substances in Russia:

- Lack of interest on the part of the military;
- Austerity measures;
- Strong opposition of the public and, especially, opposition from the local population in regions having demilitarized facilities;

- Strong support for the objective of chemical demilitarization by the RF president and key ministries as well as non-governmental organizations (NGOs) and peace campaigners; and
- Publicity around chemical weapons issues generated by the court's proceeding on the Mirzayanov case.

Costs of CWC Compliance

The implementation of the convention will require new investments, expenditure on the development of the necessary technologies, training of personnel, etc. The safety of the destruction process as well as carrying out of international verification must be ensured. The scale of the work to be done in implementing chemical disarmament is quite impressive:

- The reconstruction, conversion, or elimination of existing CW production facilities;
- Elimination of large quantities of stockpiled weapons;
- Development of technologies;
- Provision for the safety of the destruction operations;
- Construction of a system of facilities for eliminating residual toxic substances as well as auxiliary facilities (burial sites for solid waste, sanitary installations, engineering constructions, service and living quarters); and
- Provision of social and economic measures.

According to official data, the destruction of 40,000 tonnes of CW munitions will require 2 trillion (2,000 billion) rubles (in 1993 prices) and \$535 million (U.S.). One-fourth of this sum is to be spent for the construction of seven CW destruction facilities. The 1994 federal budget of the Russian Federation allocated 114 billion rubles for the destruction of chemical weapons. However, according to the September 27, 1994, issue of *Izvestia*, only 6 billion rubles were received for these purposes by October. This makes it very difficult for Russia to comply with its international undertakings with regard to the CWC schedule of destruction.

A necessary prerequisite for the implementation of a chemical disarmament program in Russia would be to take into account the main demands and wishes of the republics and regions of the RF where chemical sites are located. Considerable additional sums will have to be allocated to fund, in particular, improvements in the social and living conditions and the development of the infrastructure of the districts where the destruction facilities are to be located. However, in view of the large federal budget deficit, plans to increase expenditures may meet with opposition from some influential members of the government and federal legislature and from political groups that are of the opinion that Russia should not assume international disarmament obligations that impose heavy financial burdens.

In its attempts to attain financial stability, the Russian government has to make unpopular decisions to reduce expenditures, which have already been approved, and to

increase revenues by extraordinary taxation. Expenditures in hard currency connected with the implementation of the convention (cost of international verification, import of equipment, financial support for the Organization for the Prohibition of Chemical Weapons) will represent a heavy burden on the already scarce hard currency reserves. Besides, Russia has a large external debt inherited from the former Soviet Union. In such a situation when the country is straining to mobilize all its export resources, it will be extremely difficult to obtain approval for additional hard currency expenditures, i.e., those related to chemical disarmament that are not easily justifiable in the eyes of public opinion.

The country finds itself in a dramatic situation as a result of a deep crisis in Russian society, which includes a crisis in political institutions, a continuing fall in production, sharpening of social contradictions, and continuing rivalries between the legislative and executive branches of the federal administration. Simultaneously, the euphoria of 1991–92 about the Cold War's end, disarmament, and partnership with the West is increasingly giving way to disappointment, apathy, and feelings of national humiliation. Thus, disarmament measures (nuclear, conventional, and chemical) have to be implemented in a highly unfavorable political and economic environment.

Russian Public Opinion and Chemical Disarmament

There are no political forces, parties, or movements that advocate the retention of the accumulated stockpiles of chemical weapons or question the need to ban them and to eliminate the specter of chemical warfare for all. Even chemical-military experts and institutions opposed to the implementation of the CWC argue on the basis of safety risks and economic burdens of CW elimination rather than on the strategic value of chemical warfare.

Russian public opinion has demonstrated an acute anxiety about anticipated negative consequences—economic, health, and environmental—of the proposed schemes for CW destruction and has shown a profound mistrust for those officials involved in planning CWC implementation. First among them were the representatives of the military-chemical complex, who earned an unfavorable reputation for their neglect of the safety and interests of the population or had been previously discredited by misinforming the public or concealing the truth about CW production, accidents, and testing.

Public controversy about the implementation of the CWC escalated as a result of a scandalous disclosure of data on some continuing chemical weapons research activities by former associates of military-chemical institutions. Those experts who disclosed research and development activities, Mirzayanov and Fedorov, were subsequently accused by the Russian Ministry of Security of having compromised state secrets related to chemical weapons. According to the conclusions of the preliminary investigation of the Mirzayanov case, he had revealed to Fedorov top-secret data, and the two of them published an article called "Poisonous Policies" in the weekly *Moscow News* newspaper which was alleged to contain state secrets.

The article said that, contrary to public statements, chemical weapons development continued throughout 1991. This disclosure was followed by disclosures by Vladimir Uglev, a former employee of the State Union Scientific Institute of Organic Chemistry in Moscow, that the institute had been involved in the development of a binary chemical

agent. The new agent, called "Novichok," was reportedly manufactured using chemicals that are not specified in the Schedules to the CWC. (Uglev was fired from the institute for speaking to the Russian mass media in February 1993.)

The public was confronted with an extremely confusing situation. Since 1987 the highest Soviet and Russian state officials (Gorbachev and Shevardnadze as well as Yeltsin and Kozyrev) emphasized in public statements that Moscow had made a final decision to completely prohibit chemical weapons and that their objective was to eliminate chemical weapons and to stop any research and development programs on new types of these weapons. Nonetheless, development of new toxic substances was going on, argued Mirzayanov and his colleagues. It is quite conspicuous that the allegations were not officially refuted. All this cast a dark shadow upon the sincerity of Moscow's policy, on the existence of political control over the military establishment, or both. This scandal called for thorough clarifications on the part of the official bodies. The allegations led to demands from the democratic media and by prominent public figures that the authorities not only drop charges against the maverick scientists from the military-chemical complex but also take steps to ensure consistency in the policies on chemical disarmament and strengthen control over their implementation.

Unfortunately, no serious clarifications followed, apart from statements that the facts published by the maverick scientists would not be a technical violation of the letter of the CWC. (The convention did not prohibit research, did not include the stated chemical components of the binary weapon, and was not yet ratified.) At the same time, the Ministry of Security was pressing the case against the maverick scientists, as the beginning of the closed trial was set for January 6, 1994. That trial (which surprisingly has raised no serious protest in the West) was obviously conceived by the military and security institutions as a showcase to intimidate other potential dissidents from the military establishment and, in a more general political sense, to demonstrate that for all of the democratic changes in Russia, their strength had not evaporated yet. Indeed, the military and security institutions might even take revenge in the not too distant future.

These concerns were highlighted in late 1993 after the October crisis and December parliamentary elections. The rise of nationalist, populist, and outright fascist political movements in the country was being countered—and to an even larger extent used as a justification—by the central bureaucracy in its attempts to enhance an authoritarian rule in Russia and to discard all kinds of democratic controls. The defense-industrial, military, and security complexes were conspicuous in their attempts to remove all the public controls that emerged in the late 1980s and early 1990s. It was revealing that, in spite of a presidential decision to disband the Ministry of Security in December 1993, the Mirzayanov trial was started as planned on January 6, 1994, although the institution pursuing the case seemingly had ceased to exist. Finally, under domestic and international pressure, the charges against Mirzayanov were dropped and the authorities had to release him.

Addressing the Compliance Problems

The disintegration of the Soviet Union had the minimum direct effect on CWC prospects, unlike its effects on most other arms control treaties. On the other hand, the CWC is greatly affected by contradictions in relations between Moscow and Russian

autonomous republics and regions, which is not the case with other treaties. Because of the psychological unattractiveness and military dubiousness of chemical weapons, domestic hard-line opposition probably would not make the CWC an issue in its campaign against "selling-out Russian security" as has been the case with Strategic Arms Reduction Treaty (START) II, Conventional Forces in Europe (CFE) and the Treaty on the Elimination of Intermediate- and Shorter-Range Missiles (INF Treaty).

The two major compliance issues relative to the CWC are undoubtedly of economic and institutional character. The economic aspect is particularly important because the CWC envisions huge investments and construction and conversion projects as well as expenditures in hard currency and resource allocations to address the concerns of local communities and regional authorities.

Under the current rate of inflation and budget deficit, it would not be feasible to find the resources to implement the plans for building destruction facilities, reconstructing railway lines and side tracks, improving the technology for the destruction of chemical weapons, etc. And even if implementation starts, it would be impossible for Russia to adhere to the timetable for the destruction of chemical weapons laid down by the convention.

Hence, much more than in any other arms control treaty, the implementation of CWC depends on financial and technological assistance from abroad, first of all from the United States. Also, an understanding attitude towards the specific economic difficulties experienced by Russia would be desirable on the part of the international community. For instance, it would be useful to examine the options of adopting cheaper methods for rendering stockpiles of chemical weapons harmless under effective international control and according to a revised timetable.

Bearing in mind the scale of work involved in destroying chemical weapon stockpiles in the RF and the importance of this task to the world community, it is appropriate to raise the question of larger international financial assistance for this purpose. Concessions on the part of western countries on repayment of the external debt of the former USSR would be most helpful as would the establishment of special funds for assistance in eliminating chemical weapons stockpiles in the RF, the purchase of equipment for the destruction or conversion for civilian applications of toxic substances.

Another problem relates to a peculiar paradigm of the present bureaucratic system in Russia. The implementation of the CWC, unlike other treaties, is assigned to a specially created institution: the Committee on the Biological and Chemical Weapons conventions, subordinated to the president. This body relies on individuals and organizations that have been particularly involved in researching, developing, and producing chemical weapons for decades. As a result, the president presently has almost no political control over the military-chemical complex and its branches that are assigned the CWC implementation. The influence of the Foreign Ministry, Parliament, academic community, or mass media on CWC implementation is much more limited than in any other area of treaty compliance.

The entrenched chemical bureaucracy has enough economic, social, local political, and environmental pretexts to drag its feet indefinitely on CWC implementation, trying to preserve as much as possible of its infrastructure, personnel, research projects, and

weapons stockpiles and to misuse foreign aid. This particular case is only one example of the general picture. The disintegration of the former rigid Communist party mechanism, in a country without private market economy and with embryonic democratic structures, has left a bureaucracy without political control and with enormous possibilities of promoting institutional, economic, and personal interests. Attempts to concentrate ever greater power in the hands of the president by his direct rule over the bureaucracy paradoxically makes him subject to the control and manipulation of high officials and corporate interests.

One of the ways to deal with this particular CWC problem might be to link larger foreign assistance with the establishment of a U.S.-Russian (or multilateral) expert commission on the usage of this aid and assessment of particular technical projects and options for CW elimination. This commission, apart from the military-chemical experts, should also involve representatives of the Foreign Ministry, Parliament, local authorities, and independent academic community and be capable of reporting directly to heads of states. This would undercut the monopoly of the vested interests on the CWC implementation and tie resources to the real problems that must be resolved to ensure on-schedule chemical disarmament.

Prohibition of Biological Weapons

A. Kaliadine

The Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (the BWC) was signed in London, Moscow, and Washington on April 10, 1972, and entered into force on March 26, 1975. Depository Governments are the USSR (Russia), Great Britain, and the United States. By the beginning of 1994, 133 states had become parties to the convention.

The convention complemented the Geneva Protocol of 1925, which reaffirmed the prohibition of the use of chemical weapons and extended this prohibition to the "use of bacteriological methods of warfare," but did not prohibit the development, production, and stockpiling of these types of weapons. Besides, the Protocol was ratified by many states with the provision that chemical and biological weapons could be used against non-parties as well as against parties that violate the Protocol. The term "bacteriological" used in this document did not include all possible biological warfare agents because in 1925 micro-organisms such as viruses were not yet known. Hence, after the signing of the Geneva Protocol, biological weapons were developed, produced, and even used.

Implementation of the Biological Weapons Convention

The BWC made up for many of the shortcomings of the 1925 Protocol. Although the convention does not explicitly reaffirm the prohibition of the use of bacteriological warfare agents, the undertaking in Article I "never in any circumstances to develop, produce, stockpile or otherwise acquire" such agents, "of types and quantities that have no justification for prophylactic, protective or other peaceful purposes," leaves no doubt that their use is never to be permitted.

The convention has constituted the world's first genuine disarmament treaty in that it provided for the destruction of existing weapons and the complete ban of an entire category of mass destruction weapons. The BWC has created the international norm against biological and toxin weapons and, in particular, has become an important element in international humanitarian law since it gives practical substance to the general prohibition of weapons that cause unnecessary suffering.

However, the regime created by the convention depended too much for its operation on the willingness of the parties to adhere to their commitments, to trust each other, and to cooperate on the issue of BWC implementation. Being a product of the Cold War era, the convention reflected the approaches prevailing in that period. Thus, no verification of the destruction of stockpiles or of conversion to peaceful purposes was envisaged. The parties were not even obliged to announce that they had complied with such commitments. Provisions for effective monitoring and verification measures were absent. The question of inspecting biological facilities was also omitted. The enforcement of obligations under the BWC was to be carried out mainly through national means of control. Thus, the whole system of enforcement under the BWC was based on trust rather than on international supervision. No measures against the offender have been explicitly

provided for. Provisions for lodging complaints through the United Nations (UN) Security Council and initiating investigations of violations were very weak since any investigation could be blocked by a veto.

Moreover, provisions of the BWC that set out prohibitions on biological warfare substances and equipment were basically flawed. The convention did not prohibit research aimed at production of these substances or at development of new warfare agents. The prohibition to develop, produce, stockpile, or otherwise acquire or retain these agents was not absolute and applied only to types and quantities of biological agents and toxins "that have no justification for prophylactic, protective or other peaceful purposes."

No limits (criteria or standards) were set in this regard. It was not clear who was to make a judgment or whether there existed a justification for the production of any given quantity. The BWC did not define the prohibited types of agents, leaving considerable scope for abuse. Allowing biological military programs for defensive purposes, the convention was ambiguous as to which activities (agents) were permitted and which were prohibited. By permitting legitimate defensive programs and activities, which at certain stages are indistinguishable from prohibited offensive preparations, as well as by allowing the production or retention of warfare agents for ostensibly permitted purposes, the convention itself creates the risk of infringement, or allegations of infringement, of its provisions. That was especially the case if research activities were carried out in secrecy at defense facilities and with outlays allocated to the defense departments. Since a very fine line divides research for peaceful purposes from research for offensive purposes, much greater transparency was necessary in research on biological agents in general. Provisions on transparency, however, were also absent in the BWC.

In the Cold War political and strategic environment, opposing states naturally were inclined to take worst-case views of each other's intentions. Fears of the military threat of biotechnology were used as a justification for expanding military-biological research programs. Mutual allegations of activities outlawed by the 1972 Convention became a feature of the superpower relationship during the Cold War years.

The way in which the Soviet government dealt with an outbreak of anthrax in early April 1979 in the Ural city of Sverdlovsk (now Ekaterinburg) generated considerable international controversy regarding Soviet compliance with the BWC. The Sverdlovsk outbreak (in which 68 people died from the disease) had been portrayed in the West as having been caused by an accident at a nearby military-biological facility. The USSR authorities, however, attributed the outbreak to an infected supply of meat. This explanation failed to convince foreign experts.

The details of the accident remained a closely guarded secret for 13 years. It was only in May 1992 that President Yeltsin acknowledged that the outbreak had been, in fact, caused by a military accident. This accident, if impartially investigated at the time, could have cleared the USSR from the international suspicion that it had violated the BWC since the existence of the military research facility in itself did not represent a formal violation of the convention and since no biological weapons were involved. (The convention does not ban research on and production of undefined quantities of biological agents needed to develop the protective equipment and devices; nor does it ban testing in

laboratories and in the field when such testing is for protective, prophylactic, or peaceful purposes.) But the Soviet government, while flatly denying charges of non-compliance, did little to dispel suspicions. Moscow chose not to resort to international consultations and investigation procedures provided for in the BWC. Nor did it offer to invite international experts to visit the place and to demonstrate that a violation of the BWC did not occur. Interestingly enough, the states that accused the USSR of non-compliance did not feel it necessary to set in motion the complaints and investigation provisions of the BWC. Perhaps they thought it more important to obtain a propaganda advantage in the Cold War contest and were not sure that they would be able to prove the case of non-compliance by following formal procedures.

After the dissolution of the USSR, a number of articles appeared in the Russian press on the subject of military-biological research. They contained previously classified data on biological research and development infrastructure and activities. It was officially disclosed that the Soviet Union had experimental samples of preparations tested in the laboratory and under field conditions. Production lines were set up that could have been used in wartime for the production of Biological Weapons (BW)-specific cocktails. However, no biological weapons were produced or stockpiled in the country or outside its territory. Most development activities were halted as soon as weapons were reaching a prototype stage. No stockpiles of BW existed since the agents developed had a short shelf-life, making stockpiling impossible.

Steps to curtail the BW program were made in the mid-1980s. The main purpose of continuing some projects was to provide means of protection against dangerous bacteriological pathogens. As early as spring 1992, the Russian government undertook a comprehensive revision of the policies of the former USSR in the field of biological warfare defense. Concrete measures were adopted to prevent actions that would contravene the BWC. Those measures covered such areas as infrastructure, personnel, budgeting, transparency, and international cooperation. On April 11, 1992, President Yeltsin signed a decree (No. 390) ensuring the implementation of Russia's international obligations in the area of BW.

The decree affirmed that the conduct of biological programs in violation of the BWC was illegal. According to the decree all works that contravened the BWC were to be terminated. Pursuant to this decree, the committee on matters pertaining to the Chemical and Biological Weapons conventions, attached to the presidency, was entrusted with the oversight of the implementation of the BWC in the Russian Federation. Further steps have been taken by Russia, both unilaterally and within appropriate international frameworks, to resolve compliance concerns and strengthen the authority of the BWC. The government confirmed the termination of offensive research, the dismantling of experimental technological lines for the production of biological agents, and the closure of the biological weapons testing facility. The number of personnel involved in military biological programs was cut by 50 percent and funding of military biological research was reduced by 30 percent. The department responsible for the offensive biological program in the Ministry of Defense was disbanded (although, very typically, a new department for radiological, biological, and chemical defense was immediately created with functions that were not clearly different from the previous body).

Changes were enacted in the legislation to enforce Russia's obligations under the BWC, which provide for criminal proceedings for development, production, acquisition, and stockpiling of BW. In this way, any violation of the BWC would be a violation of domestic law and any person violating the convention would be transgressing domestic, as well as international, law. This allegedly should have given support to whistle-blowers who would be in the position to expose a secret BW program with impunity. (Although the Mirzoyanov case has once again shown that, under the present regime of uncontrolled bureaucracy in Russia, actual practice might be very different than the law or the good intentions of political leaders when these are not supported by determined implementation efforts.) In 1992 Russia agreed to take the following steps to resolve compliance concerns:

- Open its non-military biological sites to visits at any time in order to remove ambiguities;
- Provide on request information about dismantling activities and clarify the information provided by Russia in its annual declarations to the United Nations; and
- Invite prominent independent scientists to participate in the investigation of cases related to compliance with the BWC.

In November 1992 Russia adopted rules for controlling the export of biological agents (pathogenic organisms, their genetically modified forms and fragments of genetic materials) that could be used to develop BW. Under the new rules, licenses are to be issued with due account of requirements resulting from Russia's international obligations. The government established export licenses procedures, including checklists of controlled items. The list of controlled biological agents consists of nine sections containing about 80 check items. The export control list incorporated in conjunction with this legislation is harmonized with international lists of controlled technologies that can be used for the production of weapons of mass destruction (WMD).

The rules controlling the export of biological agents provide special inquiries seeking to authorize or ban the export of agents. Biological agents cannot be re-exported to nations that violate the BWC or the Geneva Protocol (Decree Order No. 711 of the President of the Russian Federation, November 20, 1992, and corresponding Government Regulation). To coordinate and provide organization and methodical support for export control activities a Commission on Export Control under the Government of the RF has been created (with the Export Control Department of the Ministry of Economy serving as a working organ of the commission). These bodies are responsible for matters related to special inquiries.

In the Joint U.S.-Russian-U.K. Statement on biological weapons of September 14, 1992, the three governments agreed to create working groups to deal with following issues:

- Visits to any military-biological facility on a reciprocal basis in order to remove ambiguities;
- Reviews of potential measures to monitor compliance with the BWC and enhance confidence in that compliance;

- Examination of the physical infrastructure of biological facilities in the three countries to determine jointly whether there is specific equipment or excess capacity inconsistent with their stated purpose;
- Consideration of cooperation in the joint development of BW defense;
- Examination of ways to promote cooperation and investment in the conversion of BW facilities, including visits to previously converted facilities;
- Consideration of exchanges of information on a confidential, reciprocal basis concerning past offensive programs;
- Provision of periodic reports to their legislatures and publics describing biological research and development activities; and
- Encouragement of exchanges of scientists at biological facilities on a long-term basis.

Following the recommendations of the Third BWC Review Conference in 1991, Russia submits all information about its biological facilities and activities connected with defense against BW to the UN Secretary General every year by mid-April. Russia has contributed to the work of the Ad Hoc Group of Governmental Experts (Verex IV) in 1992–93, which in its Final Report, assessed the feasibility of a broad range of additional potential measures to verify the BWC and recommended to convene a Special Conference to consider the international verification mechanism of the BWC.

The task before the conference is not limited to setting up a reliable control mechanism, but to include the effective use of economic and technical resources for the purpose of verification, so as not to create obstacles for activities not prohibited by the convention. In the opinion of Russian experts, the most effective elements of a monitoring regime are disclosure and notification of biological activities, the verification of documents and the interviewing of personnel at facilities, and visual inspection and identification of equipment and medical inspection.

Thus, both domestically and internationally, Russia has gone a long way to strengthen the norms prohibiting biological warfare and to improve compliance standards. This course of action is not generally encountering opposition either from the military, influential political groups, or the scientific community. No allegations against the present government on the issue of compliance with the BWC have been brought forward by non-governmental organizations (NGOs) or whistle-blowers within Russia. However, on March 27, 1994, the British *Sunday Times* published an article accusing the Russian high command of secretly continuing work on BW and thus deceiving the Russian president. This accusation was refuted by the Ministry of Defense as groundless and provocative.

There is no strategic rationale, political support, or financial means in Russia at present to pursue a BW capability. On the other hand, some statements by experts, journalists, and public figures imply that the government might have gone too far in reducing the biological research infrastructure and related expenditures, thus jeopardizing the defense capability of the country, since some states continued to advance their scientific-technical potential for the production of BW.

Such concerns were set forth in a special document, prepared by Russian specialists, in October 1992. Reference was made to U.S. policy, in which defense against biological warfare had been designated as a priority requirement. Given the nature of biological research and development (R&D) activities and developments in biotechnology and proliferation, the maintenance of biological defense capabilities by Russia and the United States would be a prudent precaution.

Thus, issues of compliance with the BWC are bound to arise. They should be resolved by resorting to international verification and compliance procedures. The end of the Cold War has created conditions to strengthen the BWC regime and reduce the chances of ambiguities and suspicions.

Missile Technology Control Regime

T. Farnasova

The Missile Technology Control Regime (MTCR), introduced in 1987 on the initiative of the United States, Great Britain, France, the Federal Republic of Germany, Italy, Canada, and Japan, has moved to the foreground of international arms control efforts.

The MTCR is designed to reduce the risk of nuclear proliferation by controlling exports that could lead to the development of nuclear weapons delivery vehicles. These export restrictions cover a wide range of equipment and technologies, including ballistic missiles, space-launch vehicles, and sounding rockets as well as unmanned aircraft, target drones, and reconnaissance drones. Export controls also apply to the associated branches of missile production industries. The main criterion for export constraints is the capability of a missile system to deliver a payload of more than 500 kilograms (kg) over a range of over 300 kilometers (km).

Twenty-three countries have subsequently joined the MTCR. A number of other countries that have not signed the agreement have agreed to abide by its main principles and recommendations and have introduced corresponding internal restrictions on the export of materials, equipment, and technology that could be used to manufacture missiles. However, all of these non-signatory adherents to the MTCR are advanced western states. A majority of nations still have not joined the MTCR, including a large number of Third World countries that are capable of manufacturing and exporting missiles and missile technology.

The position of the former Soviet Union regarding the MTCR was defined in the joint U.S.–Soviet statement on the non-proliferation of nuclear weapons, ballistic missiles, missile technology, and chemical weapons that was signed when Soviet President Mikhail Gorbachev visited the United States in May–June 1990. Both parties expressed their support for the goals of the MTCR to combat missiles and related equipment and technology. The statement urged all countries that had not done so yet to abide by the spirit and main principles of the MTCR regime. The United States and the USSR agreed to adopt measures, including export controls and other internal regulations, to restrict the proliferation of missiles on a global basis.

The parties also agreed to hold bilateral consultations to exchange information on such controls and regulations and to define specific measures to counter the proliferation of missiles. In addition, the two countries agreed to make efforts to halt the proliferation of missiles, particularly in crisis regions such as the Middle East. It was noted in the joint statement that the USSR and the United States supported cooperation among nations on the peaceful uses of outer space, as long as this cooperation did not facilitate the proliferation of missiles.

Russian Export Control Legislation

Since the demise of the Soviet Union, the Russian Federation has not yet ratified, nor is a formal party to, the MTCR agreement. However, in January 1993, President Yeltsin confirmed Russia's intention to join the MTCR as an equal partner. Toward this

goal, the Russian government has tightened its domestic export control legislation and is setting up a state export control system. On January 27, 1993, on the basis of a presidential directive, the Russian government issued a decree controlling the export of equipment, materials, and technology used in the manufacture of space vehicles, sounding missiles, and unmanned aircraft (such as cruise missiles and radio-guided target and reconnaissance drones) capable of delivering a payload of over 500 kg over a distance of more than 300 km as well as the export of equipment used for the maintenance and launching of such missiles and unmanned vehicles. The decree stressed that Russia did not want to create obstacles to national space programs, or international cooperation on such programs, if their implementation did not facilitate the manufacture of missile delivery systems by involved countries.

The MTCR regime, in addition to setting forth export controls on Russian goods and services used in the manufacture of missiles, provides rules for issuing licenses permitting the export of goods and services associated with missile manufacturing. The Russian government has approved a list of missile equipment, materials, and technologies, the export of which is either strictly prohibited or subject to licensing. The first category of this list includes finished missile components that are essential in the manufacture of missiles and are prohibited from export. The second category contains materials, equipment, and technologies that are subject to export licensing.

The decree imposes on all subjects engaged in economic activities on the territory of the Russian Federation or in places under its control or jurisdiction, independent of the form of ownership, the following requirements: When concluding a contract or agreement on the export (transfer or exchange) of goods and services used in the manufacture of missiles, there is an obligation to indicate in the text of the contract or agreement the final use of the goods and services to be exported. Moreover, the exporter must include an undertaking by the importer that the items will be used only for purposes not connected with the manufacture (including modification) of missile systems with characteristics exceeding those laid down in the decree and not to re-export them without the written consent from the exporter. The decree requires a licensed exporter to verify the end-use of the exported equipment or technology. Licenses are issued by the Ministry of Foreign Economic Relations of the Russian Federation on the basis of the recommendation by Export Control Board of Russia.

Both the content and nature of the measures adopted in the Russian decree are consistent with the principles and recommendations set out in the MTCR and demonstrate the Russian Federation's intention to observe and promote the regime.

In addition, Russia is trying to organize cooperation and coordination among the Commonwealth of Independent (CIS) countries on export controls of dual-purpose materials and technology that could be used in the manufacture of missiles and their delivery systems. As of this writing, such controls exist only in the Russian Federation. However, at several sessions of the heads of CIS states, the CIS leaders agreed to coordinate export controls pertaining to dual-use materials and technology, establish a CIS Council on multilateral export controls, and harmonize national export control systems in line with existing international regimes.

In accordance with these agreements, Russia continues to cooperate actively with the United States and other countries on restricting the proliferation of combat missiles and missile technology. In 1992 and 1993 a number of bilateral U.S.-Russian expert-level consultations were held in which specific proposals were worked out and mutually acceptable solutions were explored to deal with this problem. Russia was represented at these talks by experts from the Ministry of Foreign Affairs and the Ministry for Foreign Economic Relations. In spite of some differences between Russia and the United States, progress was made towards cooperation and a joint memorandum is being prepared on missile technology export controls.

Serious disagreements between Russia and the United States on the issue of missile technology control continue, however. A particular source of conflict was a contract with India (originally signed by the Soviet Union and continued by the Russian Federation) in which the Russian Space Agency, Glavkosmos, and the Indian Agency for Space Research were to implement a program for the development, manufacture, and delivery of cryogenic engines and for the transfer to India of production technology and related services. The joint Indian-Russian program envisaged the possibility of concluding contracts for the launching of the Indian IRS-1D sounding satellites "Molnia" and "Proton" with Russian missile delivery vehicles. The implementation of the estimated \$200-\$250 million cryogenic engines program was planned for 1994.

The signing of this contract was interpreted as a violation of the MTCR by the United States, which took a tough position regarding the envisioned transfer of missile technology to India, insisting on strict compliance by Russia with the missile technology export control regime. The U.S. government has officially stated that, by supplying cryogenic engines to India, Russia was violating the agreement on the non-proliferation of missiles and missile technology. The technology to be transferred to India was indeed of a dual nature and could be used for military purposes. In the view of the United States, the deal was also unacceptable because India was not a party to the nuclear Non-Proliferation Treaty (NPT), for all intents and purposes possessed nuclear weapons, and was successfully implementing its own missile development program.

In Russian government circles there was no agreed position on this matter, and no official statements were issued by the Russian government or the Supreme Soviet in 1992 or early 1993. Among those who strongly advocated the Russian-Indian contract were the Ministry of Foreign Economic Relations, the State Committee on Defense Industries, and the Main Space Directorate (of the former Ministry on General Machine-Building). They argued that the Russian-Indian contract was not in contradiction with the MTCR agreement. Many Russian experts claimed that the cryogenic engines which Russia intended to supply to India were of no military value: their type of liquid fuel required about 90 days of preparation to launch. In addition, the Prime Minister of India stated that India intended to use the engines exclusively for peaceful purposes.

A contrary view noted that the technology to be transferred to India was associated with a missile of greater payload and range than defined in the MTCR. However, such technology was less conducive to developing military delivery vehicles than the short-range missile systems permitted under the MTCR, which ~~could be modified to enhance~~ their performance to surpass the prohibited threshold.

Those who believed the contract did not violate the terms or spirit of the MTCR viewed the U.S. opposition to the Russian-Indian deal as inspired by considerations of commercial competition. The United States, it followed, was motivated by its desire to retain a global monopoly on missile technology and commercial space launches. It was argued that since Russia had a unique scientific-technical potential and facilities in the field of missile technology, production, and space launches, any U.S. efforts to prevent the appearance of Russian missile and space assets on world markets were clearly contrary to Russian interests.

Moreover, supporters of the Russian-Indian contract claimed that it was of great economic importance to both countries. A broad political campaign was started in support of expanding foreign sales of Russian missiles and missile technology as well as other types of arms and military equipment to gain allegedly huge revenues of hard currency. These revenues would be vitally necessary for economic reforms and conversion and would serve as a substitute to the inadequate, mismanaged, and humiliating western economic aid and credits. This position was shared by a majority of the deputies of the Supreme Soviet.

The official position of the Russian Ministry of Foreign Affairs evolved substantially until the summer of 1993 when six rounds of U.S.-Russian negotiations were held to deal with the problem of Russia's compliance with the MTCR. At first, Russia denied the U.S. accusation of violations of the MTCR agreement and insisted on the peaceful nature of the missile technology involved in Russian-Indian deal. In order to resolve the controversy, the Russian Ministry of Foreign Affairs proposed to submit the contract to international expertise and review, with the participation of experts and representatives from Russia, the United States, third countries, and other leading space powers. This proposal was turned down by the United States.

The Russian official position continued to change towards accommodating American demands because of U.S. political pressure. This pressure was enhanced by Russia's dependence on U.S. economic aid and International Monetary Fund credits, to which the whole Yeltsin-Gaidar "shock therapy" economic reforms were tied. In addition, growing confrontation between Russia's president and the Supreme Soviet on economic and political issues made Yeltsin more hostile to the views of his domestic opposition and more eager to challenge it on foreign policy questions. This provided the Foreign Ministry leadership, which was initially against the deal, with better leverage to affect the presidential decision.

During the final stage of the U.S.-Russian talks, which took place in Washington on July 15-17, 1993, Russia accepted a solution, the main principles of which had been settled beforehand by the presidents of Russia and the United States during their meeting in Tokyo. In particular, a package of documents on the export of missile technology and U.S.-Russian space cooperation was signed. These documents were further elaborated and signed in August 1993 during the meeting of Russia's Prime Minister Viktor Chernomyrdin and U.S. Vice President Al Gore in Washington.

At a subsequent meeting between the Prime Minister of the Russian Federation and the U.S. Vice President in Washington in December 1993, the directions for further cooperation in space exploration were defined. In accordance with the packet of docu-

ments signed at the meeting, it was envisaged that Russia would participate in the construction of the international space station "Alpha." The contract amounted to a total of \$2 billion, including \$400 million for the first phase in 1994–97. The U.S. Space Shuttle was to make ten flights to the Russian space station "Mir," and a jointly manned space flight program for 1994–97 was to receive \$100 million per year in funding from the United States. Other space projects were agreed upon at the meeting, including the exploration of the earth from space, monitoring of the environment, science-intensive technology, etc.

For the financially strapped Russian space industry, it was very important to obtain access to the world market of space services. The director of Glavkosmos pointed out that many space enterprises and design bureaus in Russia were on the brink of closure and were therefore extremely interested in all forms of revenues outside the state budget. Further, Russian space boosters have the important advantages of considerable reliability, low cost, and heavy payload capabilities. Agreements have been reached with the European Community for twelve commercial missile launches in the period of 1996–2000.

In accordance with the U.S.–Russian agreement of August 1993, Russia had to suspend the implementation of the contract on cryogenic engines with India before January 1, 1994. Still, Russia reserved the right to supply India with the promised cryogenic engines subject to their use, under proper international control, for peaceful space launches only. However, Russia was obliged to revise the terms of the initial contract and not transfer any missile production technology to India. Moreover, as of November 1, 1993, Russia promised to assume unilaterally the obligation to comply with the MTCR. In April 1994, the deal to supply India with two cryogenic rocket engines for launching its commercial and research satellites in 1996 was confirmed at a meeting between Glavkosmos and its Indian partners.

Explaining the Russian position at a press conference in Washington in August 1993, the head of the Russian delegation and Glavkosmos, Yuri Koptiev, stated that Russia's refusal to implement the contract with India was entirely due to the need to comply with the MTCR and safeguard its national security interests. The economic reason for the change in the terms of the contract, according to Koptiev, was the extremely difficult financial situation of Russia. The political aspect of the problem was that even cryogenic missile technology could be used for both peaceful and military purposes. In his opinion, it was in the interest of Russia itself not to contribute to the proliferation of missiles in the world and not to supply them to its neighbors. This was not a question of a lack of confidence in a partner but of the general principles of national security.

However, the Russian government's concession to public U.S. pressure, and the awkward way in which Russian diplomacy was afflicted with inconsistency and bureaucratic mishaps, was viewed as an insult by India. The Russian position also led to serious conflict among the government departments and between the executive branch and the Supreme Soviet. The domestic political positions of Yeltsin and Kozyrev were seriously damaged, and their policy was attacked as yet another humiliating and detrimental unilateral concession to the West.

At the special hearings in the Supreme Soviet on the Russian-Indian contract, the deputy chairman of the Committee on International Affairs and Foreign Economic Relations of the Supreme Soviet, Vladimir Mikhailov, stated that the Foreign Ministry had, "on its own initiative canceled the missile deal" and was trying, after the fact, to obtain the consent of the president and the government. The head of the Russian delegation to the Washington talks has, however, claimed that the documents signed in the United States had been submitted for expert opinion to the Ministry of Foreign Affairs, the Ministry of Foreign Economic Relations, the Russian State Committee of Defense Industries, and the Russian Ministry of Defense.

In the course of the parliamentary hearings, the Ministry of Foreign Economic Relations distributed a memorandum of alternatives for alleviating the consequences of the cancellation of the contract with India. According to the ministry's estimates, the financial loss would amount to about \$1 million. Moreover, the ministry suggested that the Washington agreements created a threat to missile and space cooperation between Russia and other CIS states. The ministry further noted that Russia did not obtain any particular advantages in return for its compliance with the MTCR. It considered the temporary entry into force of the U.S.-Russian memorandum, beginning November 1, 1993, as premature since the Supreme Soviet reserved its right of ratification to that type of document as well. The Ministry of Foreign Economic Relations suggested that the Ministry of Foreign Affairs should work out a program that would eliminate the negative economic and political effects of the cancellation of the contract with India. Finally, the Ministry of Foreign Economic Relations also proposed the establishment of a special government commission that would examine all the consequences of the U.S.-Russian agreement and prepare a report to the government and the Supreme Soviet.

The October Crisis and December parliamentary elections in Russia in 1993 drastically changed the domestic political situation. There followed a general but tangible shift towards conservative and nationalist moods. Although the newly elected parliament was limited by the new constitution in its authority over foreign and military policies, the bureaucratic institutions received greater freedom of action and liberation from political, not to mention public, control. The general idea of expanding Russian arms exports gained still greater political support from the presidential apparatus, Security Council, defense industries, foreign trade organizations, and Parliament.

Nonetheless, some progress in the MTCR area did take place, primarily in domestic and international legal aspects of the issue. On November 19, 1993, President Yeltsin signed a decree "on changes and additions in the list of equipment, materials and technologies used for the production of missile weapons, the export of which is subject to licensing." Another presidential decree, in February 1994, prohibited the export without a license of certain types of raw materials, equipment, technology, and scientific and technical information associated with the production of arms and military equipment.

These documents provide a foundation for a national export control system with respect to missiles and missile technology in the Russian Federation in accordance with the provisions of the MTCR and with the generally accepted international standards for export controls of weapons of mass destruction (WMD), their delivery systems, and related

dual-purpose products. The amended national missile technology export control system in Russia creates an important legal base for resolving possible conflicts in international trade and for determining the domestic legality of any new export contract.

At the U.S.–Russian summit in January 1994, the two leaders signed a Joint U.S.–Russian Statement on the non-proliferation of weapons of mass destruction and their delivery means. The statement included a list of priority measures designed to counter proliferation. Presidents Clinton and Yeltsin agreed that the proliferation of WMD and their missile delivery systems represented an acute threat to international security after the end of the Cold War. They declared the resolve of their nations to cooperate actively and closely with each other and with other interested states for the purpose of preventing and reducing this threat.

Russian Compliance Problems with the MTCR

Domestic legislation and international declarations notwithstanding, the problem of Russia's adherence to the MTCR is not conclusively resolved. There are two principal aspects of this problem, one dealing with the deficiencies of MTCR itself, the other stemming from the evolving domestic situation in Russia.

The existing MTCR suffers from substantial flaws that were, to a considerable degree, the reason for the serious disagreement between the United States and Russia on Moscow's compliance with the missile technology regime. First, unlike the NPT, the MTCR does not have the status of a legal treaty with an official control mechanism or body. The MTCR's recommendations and regulations are implemented on a unilateral basis by the government of each state-party, thus virtually ensuring conflicts based on different interpretations of particular provisions and cases.

Second, the MTCR restricts the export and transfer policies of advanced exporting nations but does not commit the states that are potential recipients of prohibited technologies to any restrictions. This is another feature that makes the MTCR different from the NPT. Moreover, the restrictions were introduced not before but after the proliferation of missiles and missile technology had occurred. The regime only weakly affects the regions where missiles and missile technology are purchased, sold, and manufactured.

Third, the introduction of export control measures by the seven advanced countries served, to some degree, as an incentive to recipient countries to develop their own missile production capabilities and to unite with other non-advanced countries to build effective missile systems on their own. Some major missile exporters, for example China, have been outside the MTCR and have entered missile markets that are avoided by the parties to the regime.

Russia initially had not been a party to negotiating and elaborating the MTCR. When Russia subsequently joined, under strong pressure from the United States, it sacrificed a completed deal with India and incurred substantial domestic and foreign political damage. The deep economic and financial crisis, a growing foreign debt, and intensified competition in world arms markets (including the unrestricted trade in missiles and missile technologies by non-parties to MTCR) make domestic support of compliance very fragile indeed. The problem was not alleviated by the changing political mood after the events of October and December, 1993. Compliance in Russia is also subject to the

environment of growing sensitivity to being treated as an equal and great power by the United States as well as broad resentment of what is perceived as past "national humiliations."

The primary factors of non-compliance in Russia are the economic and financial resources crisis and the disintegration of centralized political control over defense industries. Under some circumstances (i.e., new controversies with the West over Russia's exports of dual-purpose technology or its space cooperation with other CIS states), there may emerge strong domestic political opposition to Russia's compliance with what might be perceived as foreign interpretations of MTCR requirements.

On the other hand, this problem is not as prominent on the national agenda as some other compliance issues. The successful development of U.S.-Russian space cooperation with tangible financial benefits, linked politically to Russia's adherence to the MTCR, would make public and political elites more receptive to constraints on missile technology exports. Alternatively, failures or disappointments in space cooperation with the West are sure to revive bad feelings about the Indian contract and undercut the policy of restraint on missile sales.

For international export controls on missile technology to be effective, they should not have an exclusively one-sided character, i.e., controls should not apply only to advanced nations. Neither should such measures have a purely prohibitive or restrictive character. At present, it is no longer possible to ignore the achievements of many Third World countries in missile development and to look upon them solely as technology recipients to be controlled. In order for international export control agreements to be effective, they should be elaborated by all the interested parties, including the suppliers and the recipients of missile technology.

The nuclear non-proliferation regime has a number of distinct differences from the missile non-proliferation regime. The latter deals not with eliminating a threatening process, but with slowing it down by restraining and limiting the technological performance of missiles. Still, some NPT principles would be worth utilizing in the MTCR. First, the MTCR should have treaty status and, eventually, data exchanges and some verification procedures. If Russia participates in and contributes to an MTCR strengthening process from the very beginning, it would feel more responsible for sustaining the agreement in the future. Second, the MTCR should be open for other states to join. Third, joining the regime must entail economic and security advantages, from sharing in the benefits of commercial use of space to receiving tactical anti-missile systems if threatened by missiles from other states. Finally, the cooperation of the United States, Russia, and other advanced nations in peaceful space projects and other programs, including the Anti-Tactical Ballistic Missile (ATBM) program, would be instrumental in clarifying the benefits of adherence to the MTCR.

The above considerations in no way imply that there are easy solutions to strengthening the MTCR or that the analogy with the NPT is anything but remote. The deficiencies of the existing MTCR are significant. Even Russia's strict compliance with the regime, unlike in many other cases of arms control, will not seriously alleviate the problem. Nevertheless, Moscow's active involvement in serious efforts to improve the regime would be crucial in all respects.

Naval Aspects of Arms Control

B. Makeev

Naval arms control has not yet become a matter of formal international agreements. However, many treaties in one way or another involve naval activities and weapon systems. In view of the specific properties of naval forces and the possibility that in the future they would become a subject of U.S.–Russian negotiations or the “Strategic Partnership” dialogue, a number of naval issues are addressed below. The problems of naval arms control compliance are an important part of the general international arms control regime and at the same time may serve as a testing ground for future agreements.

The “Incidents at Sea Agreement” signed in 1972 between the USSR and the United States is extended every three years and its effectiveness is reviewed yearly at a consultative meeting of naval experts. The main idea behind this agreement is the regulation of the activities of the ships and aircraft of the two sides, including the prohibition of some activities (e.g., simulated attacks). Of great importance was the establishment of permanent communications between the two naval staffs and of a mechanism to examine mutual concerns. Very often incidents are resolved by the naval officers themselves, without the help of diplomats, on the basis of the existing agreements. These communications were successful even during the most tense periods in Soviet–American relations.

The Ballistic Missile Launch Notification Agreement was signed in 1988. It covers all launches of intercontinental and submarine-launched ballistic missiles (ICBMs and SLBMs) and stipulates that notification of the general launch area and the boundaries of the area where the warheads will come down should be given no less than 24 hours in advance. If notification is given in time, there is no need for any special verification of this agreement.

The Agreement on the Prevention of Dangerous Military Activities, including those at sea, came into force on January 1, 1990. The control measures to ensure compliance with the agreement are directed at the avoidance of any actions that could be interpreted as provocative and at the immediate prevention of any armed clashes occurring in a conflict situation based on misperceived intentions.

In addition, the special agreements on the prevention of incidents at sea beyond the limits of territorial waters, concluded in 1989–90 between the Soviet Union, France, Italy, Spain and Canada, complements a series of similar agreements reached in the period between 1972 and 1988 between the Soviet Union and the United States. Russia has inherited the Soviet naval arms control commitments and is strictly observing them.

It would be expedient to conclude similar agreements between Russia and other naval powers such as Japan and China. Further agreements on confidence-building measures at sea should entail notification of exercises and movements of fleets with verification—by national technical means (NTM) and observers—of their scale and nature. This kind of agreement does not affect the structure or composition of navies

but does engender a climate of trust between states and contributes to strengthened international peace and security.

U.S.–Russian Naval Relations

A specific problem for naval arms control concerns the prevention of underwater submarine collisions, especially with nuclear-powered and nuclear-armed submarines, which can cause major damage to the sea environment. U.S. and Russian unilateral commitments to withdraw tactical nuclear weapons from their navies help to alleviate the problem but do not remove it. There are nuclear-powered ballistic-missile submarines (SSBNs) on permanent patrol in the oceans, nuclear-powered submarines of all classes, and nuclear subs of third parties. Of particular risk is the continuing U.S. practice of tracking Russian SSBNs with its nuclear-powered attack submarines (SSNs) which have caused a number of underwater collisions, including recent incidents in the Arctic seas. In addition to human, material, and environmental losses and damage, these events regularly revive mutual mistrust, Russia's suspicions about America's interpretation of the "Strategic Partnership," and insistence that Russia shift a larger portion of its strategic forces from land to sea under Strategic Arms Reduction Treaty (START) II. However, the extension of Incidents at Sea Agreements to submarines is difficult because of the technical problems of submarine detection and of parties proving the fact of a violation and identifying the trespasser.

Nonetheless, the new cooperative relations between the United States and Russia, and the desirable change of traditional practices of tracking SSBNs and conducting stealthy operations close to each other's shores, might open some possibilities in the near future. For example, there could be an agreement to prohibit submarines from coming within a certain distance of one another in specific sea areas and to prohibit deliberate tracking. This could be verified by the obligation, in the case of a collision, to provide for the right of challenge inspection at bases or repair docks, to exchange data from sea-logs, and/or to provide necessary maps and charts. After these steps, an incident could be subject to a special commission review, established either as part of an existing or an autonomous control institution. The naval sections of the START I and START II treaties and unilateral initiatives and agreements between Russia and the United States on the limitation and elimination of tactical nuclear weapons should also constitute a part of this stage of naval arms control.

In the course of negotiations on deep cuts in strategic offensive forces, the two sides reached agreements relating to the quantitative levels of sea-based weapon systems, their production and deployment, access to the telemetric information released at every test launch of SLBMs, the number of warheads on ballistic missiles, and other issues. In Russia, implementation of these agreements is carried out by the Center for the Implementation of the Treaties on the Reduction of Naval Armaments. Apart from accounting activities and constant supervision of the dismantling and conversion of naval armaments subject to the treaties, the Center is very active in organizing and actually carrying out this work. In spite of the fact that the Center was only formed in May 1992, it has already accomplished a great deal in respect to the use of strategic nuclear assets (components and material) for peaceful, scientific, or commercial purposes. A number of contracts have been concluded with industry to carry out preliminary work on the

destruction of SLBMs and also to supply the Navy with additional technological equipment for the elimination and utilization of the armaments subject to the treaties.

With the assistance and participation of the Center, projects are being worked out for the reequipping and construction of new installations for the base near Novosibirsk. Construction has started on additional facilities for the Northern and Pacific Fleets. The sites for reconversion or dismantling of SLBM launchers, located in Severodvinsk, Pashino, and the Bolshoi Kamen Bay, are under the Center's control as well. It has hosted American inspection groups at SLBM storage and loading sites.

Naval Compliance Problems: Storage and Destruction

Considerable difficulties arise in implementing treaty provisions for the control of storage and destruction of naval tactical missiles. In the Russian Navy all tactical nuclear weapons are being removed from surface vessels, submarines, and land-based aviation. Some of these weapons are stored at centralized sites and some are eliminated. In controlling the elimination of naval tactical nuclear weapons, experience acquired during the preparation and implementation of the Intermediate-Range Nuclear Forces (INF) Treaty is used, including direct borrowing of the formulas, methods, procedures, and measures in respect to these weapons.

In the next few years, the Russian Navy will have to eliminate more than a thousand ballistic missiles; hundreds of aircraft, air-launched cruise missiles, and anti-submarine torpedoes; and scores of SSBNs. Special environmental-friendly technologies will have to be produced, verified in practice, and introduced into the elimination process. Special equipment will have to be developed to implement these technologies. It will be further necessary to reequip existing bases and build new facilities for the elimination of liquid-fuel SLBMs and nuclear reactors of atomic submarines. According to preliminary estimates, this work will cost the Russian Navy about 15-17 billion rubles (in 1992 prices).

Problems are exacerbated by the massive general scope of naval reductions implemented in view of the obsolescence of ships and extreme shortage of funds to modernize and maintain naval forces. From 1990 to 1993, 136 submarines, 173 surface vessels, and 85 small craft were decommissioned by Russia.

In 1993 about 250 submarines (including 55 strategic and 89 nuclear attack classes); 190 large surface vessels (aircraft capable cruisers, missile cruisers, destroyers, and large Anti-Submarine Warfare (ASW) vessels); and more than 600 smaller vessels and boats remained in active service. By 1995 these numbers will be reduced by 22 percent, and by the year 2000 by yet another 16 percent. The number of SSBNs will be reduced by 30. From the environmental point of view, a centralized, state-sponsored approach is needed that can link all the aspects of this important problem into a single cohesive plan. The elimination of SSBNs and, in particular, the utilization of their nuclear power plants may become a major bottleneck for START implementation and the cause of serious compliance problems.

The tempo at which naval nuclear weapons are presently being dismantled and utilized does not correspond, however, to the tempo of their reduction. The utilization of submarines is a particularly difficult problem. Technically obsolete vessels built in the

1950s and 1960s are being written off at a rapid rate. The Navy has worked out a plan for the decommissioning of these vessels but, because of a lack of funding and inadequate shipbuilding and ship repair capacities, timely preparation for their elimination has not been carried out.

The difficulties connected with the utilization of submarines are aggravated by an acute shortage of special storage depots and equipment for the disposal of nuclear fuel from reactors and other radioactive waste. A program adopted in 1992 by the government of the Russian Federation envisaged the building of underground storage sites for submarines, transit depots for spent nuclear fuel, additional equipment for naval shipyards, and shore facilities for the deactivation of reactors and burying of radioactive waste. This program, however, is not being implemented because of financial constraints. In the first half of 1993 only 1 percent of the allocations set forth in the program have been made available.

For all these reasons, decommissioned nuclear submarines remain at their moorings for a long time awaiting their turn to be utilized. These "mothballed" vessels require labor-intensive servicing in order to prevent sinking, keep the nuclear reactors in satisfactory condition, and maintain a normal level of radiation. The reduced crews of specialists left behind on these vessels cost a great deal but are essential for environmental safety when decommissioned nuclear submarines are forced to remain inactive for long periods. It is not, however, possible to guarantee absolute environmental safety when a large number of vessels with nuclear reactors are floating, and sinking, in bays for a long period. Therefore, the utilization process must be accelerated to catch up with the rate at which nuclear submarines are decommissioned.

As long as the Russian Navy has to cope with these problems on its own by allocating resources from its shrinking budget, it will not be possible to solve them completely. The problem of decommissioned submarines should be included—and financed accordingly—in the state program for the disposal of radioactive waste. Under the auspices of the State Atomic Monitoring Service, a special branch should be created for the collection, packing, transportation, processing, and subsequent burying of expended radioactive materials. This branch should be provided with the necessary facilities for processing this waste as well as regional "gravediggers" to bury the residual substances.

Naval compliance problems are composed of various elements of different agreements that involve naval vessels, weapon systems, and operational activities. However, there are some unifying features in all these elements, including the psychology of the sailors of the world. Of all the armed services during the Cold War, the U.S. and Soviet navies—operating away from home ports, with high degrees of autonomy, and being locked in hostile tactical and technical interaction—were always the closest to instantly engaging each other in actual combat. But with the end of Cold War confrontation, they became the first and most willing to initiate cooperation, as was proved by joint exercises in the Barents Sea in March 1994. Thus, it makes sense to integrate naval cooperative activities and arms control and confidence-building compliance monitoring under the auspices of a single (bilateral and later multilateral) center or commission on cooperation and treaty compliance at sea.

The problem of decommissioning Russian nuclear submarines is presently greatly understated and may cause many problems in the future. Although the process of decommissioning is more related to physical obsolescence than to treaty compliance, the costs and environmental dangers associated with it would further stir up Russian public moods and political campaigns about the "unacceptable financial burdens" of disarmament. Large expenditures for decommissioning would detract from other disarmament funds and thus may endanger, both economically and politically, other treaty compliance efforts. The financial crisis and domestic opposition factors could become the source of general Russian non-compliance, further triggered by submarine problems or, still worse, by some major environmental catastrophe.

The decommissioning of Russian submarines should be a primary area for the application of U.S. and other western economic aid under the rubric of "Cooperative Denuclearization." This area might even be more important and urgent than nuclear munitions dismantling and utilization. The subject of submarine decommissioning, which is not directly tied to specific treaties and represents environmental hazards for other nations as well, may not be as sensitive a domestic political issue as other cases of treaty compliance that are often viewed as instances of Russia's "selling out its national security to the West."