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**Implications of the  
START II Treaty for  
US-Russian Relations**

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*Editor*

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*Pragmatic steps toward ideal objectives*



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## Executive Summary

The START II Treaty, signed by Presidents Boris Yeltsin and George Bush in January 1993, was a manifestation of the profound changes in political and strategic relationships between Moscow and Washington. At the same time, it was a historically unprecedented arms control treaty, envisioning a radical reduction and restructuring of strategic forces with broad strategic, political, and economic implications.

In Russia, the treaty immediately appeared in the midst of acute domestic infighting on crucial economic, social, and foreign policy issues. START II, which overlaps the START I Treaty signed in 1991, also became linked to Russia's controversial relations with the other former Soviet republics, primarily Ukraine, where a large portion of the former Soviet strategic forces are presently deployed.

The first chapter of this monograph provides a general overview of the current levels and structure of US and former Soviet strategic offensive forces, their unilateral reductions since 1991, and their remaining strategic modernization programs.

The primary asymmetry between US and Soviet force postures has been the Soviet reliance on land-based fixed missiles and the US preference for sea-based missile forces (page 2). Improvement in nuclear warhead accuracy and yield and the introduction of MIRV (Multiple Independently Targeted Reentry Vehicle) systems by both sides has disadvantaged the USSR by increasing the vulnerability of the bulk of its forces to counterforce strikes. Nevertheless, the Soviet Union retained sufficient retaliatory capability (4). This perception of the balance of forces provided the basis for the formulation of the principles of strategic stability underlying the US-Soviet arms control talks. These principles were reflected in START I, and to a much larger degree in START II, supplementing the older notions of parity, equal security, and essential equality of the 1970s and 1980s.

In the second chapter the main terms and interaction of START I and START II are analyzed, as well as their expected impact on the asymmetric strategic forces and programs of each side. For the first time, unclassified Russian military assessments of the costs of arms reductions and modernization programs are provided (8). While the costs of implementing START I and START II are estimated at about \$6 billion, estimated savings from START II should be over \$7 billion (because of the difficulty in converting ruble values to dollar values, the figures used in this study are approximate estimates based on 1991-92 prices) (10). Russian force reductions, envisaged by START II, are correlated with natural weapons retirement and modernization program revisions that have come about due to the disintegration of the former Soviet military-industrial complex and Russian economic and financial crisis.

There is no doubt that the new treaty will affect former Soviet and future Russian strategic forces more severely and irreversibly than it will affect the United States. Nevertheless, most of Russian force reductions during the next decade would be implemented regardless, although the dismantling procedures and modernization programs would be somewhat different without START II. Forced to retire obsolete weapons systems

without having the economic resources to develop replacements, Russia would have been unable to avoid unilaterally reducing its forces below START I levels (10). Essentially, START II provides Russia with a cost-saving bilateral opportunity to implement substantial force reductions and curtail modernization programs alongside similar US reductions.

Perhaps more important than force levels and structure is START II's potential effect on the traditional Soviet strategic doctrine and operational planning as discussed in the third chapter: the heavy reliance on the launch-on-warning concept and extensive counterforce targeting will have to be revised after the force reductions and restructuring envisaged by the treaty (16). It is argued, however, that abandoning these Cold War concepts will be necessary in any case in view of new Russian domestic and foreign priorities, and that this could be more effectively accomplished on a mutual basis with the United States (16). Beyond restructuring on the basis of available force-level options, Russia (and to some extent the United States as well) will have to reappraise the principles on which its nuclear strategy is based. START II does not conflict with this major strategic reform and in some respects facilitates it.

Chapter four examines some of the deficiencies of START II and certain aspects that could be altered to make it more conducive to the continued positive transformation of the US-Russian strategic relationship. These deficiencies include insufficient reductions on both sides, given recent changes in the new political and security relationship (19); excessively stringent limitations of Russian forces which will entail additional expenditures and technical difficulties for Russian force reductions and modernization programs (20); and excessively mild restrictions on US forces, which may create additional Russian security concerns and certain costly defense responses (21). New criteria such as relative counterforce capability, survivability, and efficiency of control systems should replace the outdated emphasis on delivery vehicles and simple numbers when calculating the relative value of weapons systems.

The fifth chapter deals with the legal, political, and security problems of Russian relations with Ukraine, Kazakhstan, and Belarus affecting strategic forces, command and control systems, maintenance, and safety. It is argued that of the three smaller republics, only Ukraine would be capable of resubordinating strategic forces on its territory to its national operational control, and even so, the difficulties are commonly underestimated (30). Such an attempt would require changing all the ICBM software (and some hardware), building and equipping new command centers and radio-communication links, rearranging maintenance and support infrastructure, creating facilities to check and service nuclear warheads, developing new targeting lists, plans, and computer flight programs, providing air defenses for ICBM sites, and expanding training facilities for officers and technicians (31). The problems associated with strategic forces in these territories have strained the relations between the republics, particularly between Russia and Ukraine. Russia, however, deserves most of the blame with regard to the deterioration of these relations (33). One solution would be for Russia to provide concessions by dividing conventional forces and offering firm security commitments in return for Ukrainian cooperation in the removal of the nuclear weapons on its territory (34).

This study argues that the optimal solution to this problem, however, would be to agree on a package of political and arms control treaties supplementing START I, START II, and the Lisbon Protocol, with the full participation of the United States and the four former Soviet republics (35). It should be possible to reach agreement on a more rapid and less costly withdrawal of missiles from operational service by removing nuclear warheads. These warheads could then be centrally stored with adequate control measures and guarantees for all interested parties. In addition, in order to satisfy Ukrainian security concerns, the five acknowledged nuclear powers could sign a multilateral collective security treaty with Ukraine (and possibly Belarus and Kazakhstan) guaranteeing each other's sovereignty and territorial integrity against any unprovoked nuclear or conventional attack (35).

In the sixth chapter, three principal options for supplemental agreements are discussed to break the impasse over Ukrainian opposition to denuclearization. One would be to remove and store separately all warheads from ICBMs and SLBMs designated for elimination under START I in one year (37). The second option may be to agree in the same way to remove in one or two years the warheads from the missiles earmarked for elimination under the first phase of START II (37). The third option would be to remove within two or three years all the nuclear warheads from ICBMs earmarked for elimination under the first and second phases of START II, as well as to withdraw some SLBMs, together with older SSBNs (38). The comparative merits and trade-offs of the three options are addressed in this chapter.

In the seventh chapter, the interaction of START II and the ABM Treaty of 1972 is scrutinized. Strategic stability requires strict compliance with limitations on strategic anti-missile defense forces and programs. Linking START II to compliance with the ABM Treaty need not contradict either anti-tactical defense systems development nor a future joint global anti-missile systems deployment so long as revision of the ABM Treaty is undertaken in a cooperative way (44).

The eighth chapter discusses the impact of the other nuclear powers' forces and programs on US-Russian arms reductions. START II implementation should not be conditioned on the limitations of the other nuclear powers. Currently, the aggregate numbers of the other nuclear powers' long-range forces constitute less than 5 to 7 percent of the total warhead numbers of each of the two nuclear superpowers (47). In ten years time, however, if the nuclear modernization programs of the three smaller nuclear powers are completed and if START II reductions are implemented, the proportion of the forces of these three countries may grow to 35 percent or as much as 80 percent of the forces of each of the big two (47).

This study argues that at some point in the future, limitation of these countries' nuclear arms will become a *sine qua non* for the furtherance of a US-Russian arms reduction and limitation regime. Such limitations could be implemented simultaneously with START III reductions (49). Agreeing on a mutually satisfactory model for these negotiations will be difficult. One possibility, however, would be for Russia to conduct parallel negotiations with France and the United Kingdom. Agreeing to count the two smaller Western European arsenals together, they could establish ceilings on certain weapons systems, like SLBMs, in concert with US-Russian START III limits (49).

The ninth and tenth chapters address the changing role of US forward-based tactical nuclear forces and conventional counterforce capabilities in light of the deep reductions and restructuring of strategic forces of the two parties. With regard to tactical nuclear weapons, much progress has already been made through unilateral reductions on both sides. In order to minimize confusion and ensure prompt implementation, however, these reductions should be formalized in an official bilateral agreement (55). Although some concerns of the Russian military regarding US conventional counterforce capabilities may not be fully justified, they should be taken into account in US posture statements, force planning, and exchange of official data. It might be useful for the United States and Russia to consult with each other on their military doctrines, perhaps concluding an agreement that both sides would view a deliberate non-nuclear attack as the equivalent of a nuclear strike and would respond accordingly.

The eleventh chapter deals with the effect of START II on the strategic command-control systems of the two sides. It is pointed out that the best Russian command and control systems are associated with the forces that are to be most affected by deep cuts, while the forces that will become much more prominent as a result of START II have significant C<sup>3</sup>I problems (66). Furthermore recent political events have made the traditional Soviet launch-on-warning strategy obsolete, necessitating a switch to a limited retaliatory strike option (66). Consequently, START II reductions affecting the most modern C<sup>3</sup>I systems of the Russian forces will have a significant degrading effect on Russia's ability to reformulate its operational strategy. Additional resources should be allocated to enhance Russian C<sup>3</sup>I systems, even at the expense of weapon modernization programs (67). Agreements to enhance survivability and interdependence of C<sup>3</sup>I systems would also be useful under conditions of reduced nuclear arms and lower alert levels (67). Other agreements which would help lower alert rates would include commitments to remove missile warheads and store them away from bases, to lower SSBN patrol rates, and to keep a major portion of the SSBN forces in port with their missiles or warheads removed to storage.

Finally the twelfth chapter describes the Russian domestic controversies and debates regarding the START II ratification process. This study argues that the opposition, whatever its real political goals, has some serious and substantive arguments against the treaty that should be taken into account and addressed at the follow-on arms reduction and limitation talks. These include asymmetries in potential break-out capabilities, limitations on sea-based counterforce capabilities, third powers' nuclear forces, and enhancement of strategic anti-missile systems limitations (72). Furthermore, the Russian leadership should learn from its mistakes on START II and, in the future, should attempt to involve the parliament and the public in all stages of the arms control process. Such efforts are crucial in building the necessary public and political support to ensure ratification (74). Finally, US policy should not passively rely on Boris Yeltsin, but instead should be more attentive to the other domestic constituencies in Russia, reassuring their concerns through new agreements, and US actions and policy statements (75).

The conclusion contains a list of suggestions designed to facilitate the ratification and implementation of START II and to preserve the momentum of joint US-Russian efforts to enhance strategic stability and expand the elements of cooperative management of their strategic relationship. In the first case, the emphasis lies in deactivating

large numbers of strategic forces by removing and storing nuclear warheads at central storage sites under mutual control. In the longer term, further reductions down to 2,000-2,500 warheads are proposed along with a shift from nuclear triads to diads, and collateral arms control measures conducive to strategic stability, nuclear safety, and non-proliferation.





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## List of Abbreviations

|                  |  |
|------------------|--|
| AAD              | Anti-aircraft Defense                              |
| ABM              | Anti-ballistic Missile (Defense or Treaty)         |
| ALCM             | Air-launched Cruise Missile                        |
| ASW              | Anti-submarine warfare                             |
| CFE              | Conventional Forces in Europe (Treaty)             |
| C <sup>3</sup> I | Command-control-communications and Intelligence    |
| CIS              | Commonwealth of Independent States                 |
| EWS              | Early-warning System                               |
| GWEN             | Ground Wave Emergency Network                      |
| ICBM             | Intercontinental Ballistic Missile                 |
| LOW              | Launch on Warning                                  |
| LUA              | Launch under Attack                                |
| MIRV             | Multiple Independently Targeted Reentry Vehicle    |
| NATO             | North Atlantic Treaty Organization                 |
| NPT              | Treaty on the Non-proliferation of Nuclear Weapons |
| NWS              | Nuclear Weapon States                              |
| SDI              | Strategic Defense Initiative                       |
| SLBM             | Submarine-launched Ballistic Missile               |
| SLCM             | Sea-launched Cruise Missile                        |
| SOF              | Strategic Offensive Forces                         |
| SSBN             | Nuclear-powered Ballistic Missile Submarine        |
| START            | Strategic Arms Reduction Talks (Treaty)            |
| TASM             | Tactical Air-to-surface Missile                    |
| TNW              | Tactical Nuclear Weapon                            |

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## Foreword

This study, edited by Alexei Arbatov of the Center for Geopolitical and Military Forecasts in Moscow, addresses key issues surrounding the Second Strategic Arms Reduction Treaty (START II), from its impact on Russian forces and operational planning, to its deficiencies as viewed from Moscow. This study discusses revealing details of the status of Russian strategic forces on Ukrainian soil, and provide useful insights into the debate within Russia over whether and how to reduce its nuclear forces. These proposals, coming from serious and well informed Russian strategic analysts, deserve careful scrutiny and consideration by Western audiences.

Such readers may be surprised to read in these pages the extent to which the Kremlin embraced a dangerous “launch on warning” doctrine for its nuclear forces during the Cold War. The authors contend that one important, but little noticed, consequence of START will be difficult changes in the command and control of Russian nuclear forces.

The authors adopt a creative, problem-solving approach to a number of important issues, including how to engage Britain and France in the process of negotiating deep cuts in nuclear forces. Most importantly, the authors provide new ideas to break the impasse over Kiev’s opposition to denuclearization. They assert that some form of security guarantees to Ukraine, along with an accelerated pace and deeper reductions in US and Russian nuclear forces, would be warranted to ensure Kiev’s adherence to a denuclearized status. In particular, the authors see value in a plan to remove all warheads from certain missiles — “downloading to zero” — and placing these warheads in secured storage away from their launchers.

Similarly, the authors propose deeper nuclear reductions as a way to defuse domestic Russian opposition to START. Given current problems in implementing the START I and II treaties, the notion of accelerating and deepening the pace of reductions may seem counter-intuitive to many. It may, however, be one key ingredient in facilitating START implementation and removing roadblocks in Kiev and Moscow.

The Henry L. Stimson Center, with funding from the W. Alton Jones Foundation, facilitated production of this report for distribution to American readers. The Stimson Center was founded in 1989 as a nonprofit, nonpartisan institution devoted to public policy research. The Center concentrates on particularly difficult national and international security issues where policy, technology, and politics intersect.

This report will also be published for Russian audiences by the Center for Geopolitical and Military Forecasts, which hopes that this analysis of Russian views will measurably assist decision makers, the media, and the American public in evaluating ways to implement deep cuts in nuclear forces. The Center for Geopolitical and Military Forecasts bears sole responsibility for its substantive content.

Michael Krepon  
Henry L. Stimson Center

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While we are not able to acknowledge their individual contributions, we are thankful to some senior US officers of the Strategic Command and 20th Air Force, and also to a number of US officials from the Defense Department, State Department, and National Security Council for their insight on the issues of strategic postures and comments on our arms control proposals.

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## Preface

The end of the four decades of Cold War, the reunification of Germany and Europe, and the demise of the Soviet Union have given rise to fundamental geopolitical and strategic transformations and realignments in the world. First and foremost, the bipolar setting of international politics, which served both as a foundation and a product of the "mortal rivalry" and mutual strategic deterrence between the two nuclear superpowers, has ceased to exist. As a result, the threat of a deliberate or inadvertent global nuclear war between the United States and Russia has virtually evaporated. On the other hand, against a background of proliferation of nuclear, chemical, and missile technology and other sophisticated weapons, regional conflicts, including those on the territory of the former USSR and in adjacent areas, have become the principal threat to peace and international security.

In view of the changing international agenda, the present Western lack of interest in the studies on the "classic" strategic balance and arms control after the Cold War decades of nuclear fixation is quite understandable. Nonetheless, it is in no way justified and in the long run could be highly counterproductive. The enormous remaining and evolving arsenals of strategic weaponry cannot be dismissed by the force of goodwill. The ratification and implementation of the START I and START II treaties are not at all assured. Furthermore, the US-Russian strategic and political rapprochement is far from irreversible.

The maintenance of political and strategic stability in the world and arrangement of the new security agenda will depend primarily on the ability of the leading powers to coordinate their political actions and to formulate their foreign priorities. Russia and the United States could potentially become very close and potent partners in this endeavor.

In most regional situations and in the majority of global problems, US and Russian national interests overlap. Both of them are interested in the preservation of regional balances of power, non-proliferation, and the containment of local conflicts.

Still, there are two major problems that may emerge as obstacles to closer relations between the two states. The first is Russia's relations with Ukraine and the other former Soviet republics, which might deteriorate into violent conflicts and may curtail the progress in Russian democratic reforms and its new cooperative relations with the West. Another problem, currently less dramatic and visible, but in the long run quite fundamental, is the evolution of the US-Russian nuclear balance.

During the decades of Cold War, the two powers had accumulated great quantities of nuclear weapons and had created a powerful conglomeration of institutional interests, technological developments, and strategic philosophies. As a result, the strategic balance has acquired a life and dialectic of its own. Even if START I and START II are successfully implemented, Russia and the United States will still retain more than 3,000 strategic nuclear weapons each, along with the ability to devastate each other's homeland (and all other countries of the world many times over). These arsenals will remain three to four times superior to the aggregate numbers of the nuclear forces of all the other nuclear

powers. In addition, the big two will retain several thousand tactical nuclear weapons deployed in their air forces or kept in storage.

Britain and France are often cited as proof that capability for mutual destruction should not necessarily be an obstacle to allied relations. The major flaw of this example is that it overlooks the principal and elementary circumstance that makes Britain and France nuclear allies—the existence of common and more powerful military adversary, the Soviet Union in the past, and Russia for the nearest future. If the other nuclear states suddenly disappeared (or became inferior to Britain and France), the two European states would be likely to develop strong suspicions regarding each other's political intentions.

The reality of the existing US-Russian “nuclear barrier” cannot be ignored whatever the desire of political leaders in Washington and Moscow. They may declare repeatedly that the two nations are partners or allies, but the nuclear barrier will put tangible limitations on their long-term political, technological, and military cooperation. The simple fact that the other power is the only one in the world with the material capability to threaten that nation's physical survival, and that the two major nuclear forces, by the logic of their magnitude, are targeted against each other and at each other's homeland, will continue to overshadow their relationship. There will never be a shortage of those in both countries who will remind the politicians that it takes decades to change strategic capabilities, while political intentions may shift overnight.

In order to bring the strategic US-Russian relationship in line with mutual political interests, the sobering realities of their nuclear relationship should not be ignored but, on the contrary, addressed head-on. They must be adjusted to the new political relations between the two nations and their changing foreign and domestic priorities. This entails the need for still more innovative negotiated solutions and unilateral or parallel steps to constrain and adjust these strategic capabilities, all of which require consistent studies and aggressive thinking. There is a narrow “window of opportunity” in the near future for elaborating joint analyses and policy recommendations on these issues. New political realities make these solutions much more feasible, but in no way irrelevant.

After the failure of the August 1991 coup d'état in Moscow, the US-Soviet negotiations on the reduction and limitation of strategic weapons was rejuvenated and revamped. The new “express” round of talks was completed on January 3, 1993, with the signing of the Treaty on the Further Reduction and Limitation of Strategic Offensive Weapons, or START II.

This treaty immediately appeared in the center of Russian domestic infighting, taking its place in the complicated mosaic of economic, political, and constitutional crises affecting foreign policy controversies in Moscow. While extreme liberals have been advocating deep unilateral cuts in strategic offensive weapons, hard-liners have been arguing in favor of the adoption of a first-strike strategy to make more effective use of the fewer and more vulnerable Russian strategic offensive weapons. These hard-liners are adamant opponents to the arms control treaties with the United States, particularly START II.

Failure to ratify the treaty, however, would deeply destabilize the US-Russian strategic relationship and political cooperation, and hamper the prospects of non-prolif-

eration in the world. The problem is complicated further by Russia's disputes with Ukraine and the other republics, which may lead to a division of the Soviet strategic forces, disintegration of their command-control systems, and degradation of their safety regimes. Still worse, a conflict caused by disputes over strategic forces that leads to military actions between Russia and its neighbors could include conventional strikes against strategic and nuclear facilities and might inadvertently involve the United States and other major states.

In this regard, certain US and Russian supplemental steps and innovative arms control methods, if constructed quickly and skillfully enough, might achieve simultaneously three important goals: first, to greatly improve the chances of START II ratification and implementation; second, to open the way for a still deeper transformation of US-Russian strategic relations in line with new political realities; and third, to render nuclear missiles outside Russia harmless without undermining the security of Ukraine and other Russian neighbors.

This research project is devoted to an analysis of START II, which is in many ways an unprecedented international document. The focus of the study is its multifaceted implications for the US-Russian political and strategic interaction, as well as for the emerging economic, political, and military interests of the Russian Federation, its relations with other former Soviet republics, the policies of other states with nuclear weapon capability, and non-proliferation in the world at large.



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## Strategic Offensive Forces: A General Overview

The strategic offensive forces of the two leading nuclear powers are built on the "triad" principle (i.e., they consist of three main components: ground-based, sea-based and air-based). Each component has its specific employment features and differs in controllability and survivability.

Thus, ground-based intercontinental ballistic missiles (ICBMs) possess the highest degree of combat readiness and flexible retargeting ability, are better adapted to rapid and coordinated launching, and have, as a rule, comparatively higher accuracy and carry a quite powerful payload. In view of this, they are considered to be more suited for a first strike than are submarine-launched ballistic missiles (SLBMs).

SLBMs are more difficult to control operationally, in view of problems with communications. They are also, with a few exceptions, less accurate and have less powerful warheads than their ground-launched equivalents. They also cannot be launched in salvos. Submarines, however, are much more survivable, since they can hide while on patrol in the depths of the ocean while keeping their missiles constantly targeted.

Manned bombers parked at airfields are far more vulnerable than ballistic missiles if they do not succeed in taking off quickly. They can also be intercepted in flight and have much longer flight times to reach their targets. On the other hand, heavy bombers carry the largest payloads and are equipped to accommodate a large array of armaments. They are capable of searching out targets of opportunity and can return to base in case of false alarms.

Each component of the triad complements and strengthens the other two. The triad structure has deprived each side of even a purely hypothetical capability to disarm the other with a first strike and has preserved an assured capability for both to deliver a massive retaliatory strike. In the absence of effective anti-aircraft and anti-missile defense systems, the capability of each side to wreak devastating revenge has served as the basis for mutual deterrence. Herein lies the "defensive" function of what, by technical and operational characteristics, are strictly offensive strategic weapons.

According to official data submitted by the two sides in 1991 at the Geneva negotiations (cited in the Memorandum to the START I Treaty), the Soviet Union possessed the following quantities of strategic offensive weapons: 1,398 ICBMs (of which 321 are on mobile launchers), 62 SSBNs with 940 SLBMs, and 162 heavy bombers. The overall strategic arsenal of the USSR amounted to 2,500 nuclear weapons delivery vehicles equipped with 10,271 nuclear warheads, with 6,612 warheads on ICBMs (618 on mobile types) and 2,804 on nuclear-powered ballistic missile submarines (SSBNs). The Memorandum did not contain any data on long-range, sea-launched nuclear cruise missiles. Those were limited by the maximum ceiling of 880 units for each side. An additional 855 nuclear warheads were deployed on Soviet heavy bombers in accordance with the counting rules laid down in START I.

The composition of the strategic forces of the former USSR and the United States is given in Table 1. It follows from this table that ground-launched ICBMs constituted the

bulk of the strike power of Soviet strategic offensive forces: nearly 64 percent of all the warheads were deployed on ICBMs, of which the overwhelming majority (5,958 units) were fitted on multiple independently targeted reentry-vehicle (MIRVed) missiles. In contrast, the core of the US forces lies in its sea-based missiles, which account for more than 50 percent of all US warheads, the remainder being almost equally divided between the land-based and air-based components.

The 1991 data differ somewhat from the present composition of forces. Some of the more obsolete systems have been retired or removed from alert status and a number of new generation systems have been deployed. In particular, about 600 land- and sea-based ballistic missiles have been taken off alert, including 90 SS-19s ICBMs in Ukraine, 10 SS-18s in Kazakhstan, and 40 SS-13s and SS-11s in Russia. Of that total, around 150 ICBMs were taken out of launch silos and 130 silos were eliminated or dismantled. Production and deployment of the SS-24 rail-mobile missile system was stopped after October 1991 and those produced were kept within their bases.

Ten Yankee-class submarines have been decommissioned from the sea based forces and their missiles have been removed from launch tubes, with about 150 SLBMs being eliminated (including non-deployed missiles). Also, production of both heavy bomber types (Tu-95MC and Tu-160) was halted and those aircraft already deployed were taken off alert and their nuclear weapons stored at airfield storage sites. The only weapon systems deployed since the signing of START I were about 30 ground-mobile single-warhead SS-25 ICBMs and 3 rail-mobile SS-24 ICBMs (for a total of 36 missiles of this type).

The United States has undertaken similar steps. All 450 old Minuteman-II ICBMs have been taken off alert; some of their warheads have been removed and stored for eventual dismantlement. All 12 older Lafayette-class SSBNs with Poseidon missiles and 6 of the 12 submarines of the same class with Trident-I SLBMs were decommissioned, with their missiles being removed from launch tubes for elimination. By 1994 all warheads are scheduled to be removed from the missiles to be eliminated under START I: 450 Minuteman-II ICBMs, and 192 Poseidon and 192 Trident-I SLBMs from 24 decommissioned submarines. Some of the older B-52G bombers were also removed from the strategic forces for conversion to non-nuclear use or elimination. Since 1991 only one Ohio class SSBN (for a total of 13 of this type) with 24 Trident-II missiles has joined the Navy and four B-2 bombers were added to the Air Force.<sup>1</sup>

Despite these changes in recent years, however, the START I information still reflects the present structure and major parameters of force levels and remains the most detailed, comprehensive, authoritative, reciprocal, and mutually verified database on this subject.

In time, the traditional emphasis in the Soviet strategic offensive forces (SOF) on land-based multiple-warhead ICBMs (60 percent of all warheads) turned out to be a fundamental liability. The introduction of MIRVed missiles by both sides and the growing

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1. See "Interview with Colonel-General I. Sergeev, Commander-in-Chief, Strategic Rocket Forces," *Izvestia*, 14 May 1993, 1-2; Yevgeny Shaposhnikov, draft paper prepared for CSIA, JFK School of Government, Harvard University, 1992, 25-26; *The Military Balance*, 1992-1993 (London: IISS, 1992), 18-19, 92-93.

**Table 1: Composition of USSR and US SOF according to the Memorandum to START I (agreed counting rules)**

|   | System           | Delivery vehicles<br>(# of warheads<br>each) | Warheads      | SSBNs<br>(# of SLBMs<br>each) |
|---|------------------|--|---------------|-------------------------------|
| <b>Union of Soviet Socialist Republics:</b> |                  |  |               |                               |
| <b>ICBMs</b>                                | SS-11            | 326 (1)                                      | 326           |                               |
|   | SS-13            | 40 (1)                                       | 40            |                               |
|   | SS-17            | 47 (4)                                       | 188           |                               |
|   | SS-18            | 308 (10)                                     | 3,080         |                               |
|   | SS-19            | 300 (6)                                      | 1,800         |                               |
|   | SS-24            | 56 (10)                                      | 560           |                               |
|   | SS-24 (rail)     | 33 (10)                                      | 330           |                               |
|   | SS-25 (mobile)   | 288 (1)                                      | 288           |                               |
| <i>Subtotal:</i>                            |                  | <b>1,398</b>                                 | <b>6,612</b>  |                               |
| <b>SLBMs</b>                                | SS-N-6           | 192 (1)                                      | 192           | Y-I 12 (16)                   |
|   | SS-N-17          | 12 (1)                                       | 12            | Y-II 1 (12)                   |
|   | SS-N-8           | 216 (1)                                      | 216           | D-I 18 (12)                   |
|   | SS-N-8           | 64 (1)                                       | 64            | D-II 4 (12)                   |
|   | SS-N-18          | 224 (3)                                      | 672           | D-III 14 (6)                  |
|   | SS-N-23          | 112 (4)                                      | 448           | D-IV 7 (16)                   |
|   | SS-N-20          | 120 (10)                                     | 1,200         | Typhoon 6 (20)                |
|   | <i>Subtotal:</i> |  | <b>940</b>    | <b>2,804</b>                  |
| <b>Bombers</b>                              | Tu-95 (ALCMs)    | 84 (8)                                       | 672           |                               |
|   | Tu-95            | 63 (1)                                       | 63            |                               |
|   | Tu-160 (ALCMs)   | 15 (8)                                       | 120           |                               |
| <i>Subtotal:</i>                            |                  | <b>162</b>                                   | <b>855</b>    |                               |
| <i>Grand Total:</i>                         |                  | <b>2,500</b>                                 | <b>10,271</b> | <b>62</b>                     |
| <b>United States:</b>                       |                  |  |               |                               |
| <b>ICBMs</b>                                | MX               | 50 (10)                                      | 500           |                               |
|   | Minuteman-III    | 500 (3)                                      | 1,500         |                               |
|   | Minuteman-II     | 450 (1)                                      | 450           |                               |
| <i>Subtotal:</i>                            |                  | <b>1,000</b>                                 | <b>2,450</b>  |                               |
| <b>SLBMs</b>                                | Poseidon         | 192 (10)                                     | 1,920         | 12 (16)                       |
|   | Trident-I        | 192 (8)                                      | 1,536         | 8 (24)                        |
|   | Trident-I        | 192 (8)                                      | 1,536         | 12 (16)                       |
|   | Trident-II       | 96 (8)                                       | 768           | 4 (24)                        |
| <i>Subtotal:</i>                            |                  | <b>672</b>                                   | <b>5,760</b>  | <b>36</b>                     |
| <b>Bombers</b>                              | B52GH(ALCMs)     | 150 (10)                                     | 1,500         |                               |
|   | B-52G (ALCMs)    | 39 (12)                                      | 468           |                               |
|   | B-52G            | 290 (1)                                      | 290           |                               |
|   | B-1B             | 95 (1)                                       | 95            |                               |
| <i>Subtotal:</i>                            |                  | <b>574</b>                                   | <b>2,353</b>  |                               |
| <i>Grand Total:</i>                         |                  | <b>2,246</b>                                 | <b>10,563</b> | <b>36</b>                     |

targeting accuracy and yield of the warheads have made even the most hardened and smallest targets—the ICBM silos of both the United States and the Soviet Union—vulnerable to a counterforce nuclear strike and, therefore, lacking in the necessary survivability to function in a reliable second strike.

But since the share of warheads and silo-based missiles in the composition of forces and in operational plans was much larger for the USSR than for the United States, the former found itself in a more vulnerable strategic situation. Because comparable technical and operational breakthroughs in anti-submarine warfare (ASW) or ABM defense did not occur, the United States is now in an increasingly advantageous strategic position, regardless of the age of the forces and recent economic and political factors affecting each party.

Having lost the counterforce competition against the United States (i.e., the capability of delivering a disarming strike against the strategic forces of the opponent), the Soviet triad has, nevertheless, retained the deterrent potential for a retaliatory strike. The enormous absolute destructive power of even a limited number of delivered nuclear weapons makes the expected damage for any aggressor incommensurate with anything to be gained from initiating a nuclear exchange and deprives “victory” of any traditional meaning.

According to one of the most well known reference points of strategic analysis, the annihilation of up to 30 percent of the population and 70 percent of the industrial potential may be inflicted on each of the major powers (bearing in mind the contemporary population density, concentration of industry, and absence of effective anti-air and anti-ballistic missile defenses) by only about 400 warheads of the megaton class. This constitutes no more than 5 to 10 percent of the aggregate totals for the two major strategic forces. Even in periods of acute confrontation it became clear that these thresholds were not only absurdly high, but were exceeded many times over by the real potentials of the two sides. The recognition of the superfluousness in nuclear forces, and the pointless danger of further competition in their buildup, led the powers to the negotiation table.

This resulted in a number of agreements to limit and reduce the long-range nuclear forces of the two powers: the Treaty on the Limitation of ABM Systems and the Interim Agreement on the Limitation of Strategic Offensive Arms (SALT I) in 1972; the SALT II Treaty in 1979 (never ratified, but adhered to up to 1986); the Treaty on the Limitation of Intermediate and Shorter-Range Missiles (INF-SRF) in 1987; the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START I) in 1991; and, finally, the START II Treaty in January 3, 1993, which will be considered in detail in the following chapters.



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## Technical, Economic, and Structural Implications

The immediate predecessor of START II was START I, signed by the presidents of the USSR and the United States in July 1991 in Moscow. The fact that the new START II Treaty was signed even before the full legal implementation of its predecessor is an unparalleled event in international practice. Moreover, the implementation period of the first phase of the new treaty overlaps with that of the old one (appropriately, in the year 2000). 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. It is possible then to compare the two treaties and determine how new political realities are reflected in the extremely complex and esoteric parameters of the nuclear balance and the agreements to reduce and limit strategic offensive weapons.

As has already been pointed out, at the time of the signing of START I, the strategic forces of the two sides (in accordance with the agreed counting rules) were as follows: the United States possessed 2,246 delivery vehicles and 10,563 warheads; the USSR had 2,500 and 10,271 respectively. Since the counting rules did not separately take into account such armaments as heavy bombers, nuclear air-to-surface missiles with a range shorter than 600 kilometers, and nuclear gravity bombs, the actual quantity of warheads on the strategic delivery vehicles of the two sides was different: for the United States it was about 14,000; for the USSR about 10,600.

In accordance with the START I Treaty, the two sides assumed the obligation to reduce the aggregate number of warheads on each side to 6,000 units over a period of seven years (these numbers are according to the counting rules; actual numbers would be about 8,000 for the United States and 7,000 for the USSR), while the number of delivery vehicles was to be lowered to 1,600. The START II Treaty, however, provides for the reduction, over the same period, down to 3,800-4,250 warheads (the first phase), but this time by the actual force loading, since all armaments of heavy bombers are now subject to the new counting rules. In the follow-on phase of the START II Treaty, by January 1, 2003, the aggregate ceiling on warheads is to be lowered further to 3,000-3,500. There was no additional reduction of the ceiling on delivery vehicles.

START I established subceilings on the number of warheads in some classes and types of weapons. Thus, the total number of warheads on sea- and land-based ballistic missiles could not exceed 4,900 units, land-based mobile ICBMs were limited to 1,100 warheads, and heavy ICBMs were limited to 1,540 warheads (on 154 missiles). The latter limitations affected only the USSR (its mobile SS-24 and SS-25 ICBMs and heavy SS-18 ICBMs), inasmuch as the United States does not possess missiles of these types. In comparison, the START II Treaty provides for even more radical measures: in the first phase (until the year 2000), all MIRVed ICBMs are limited by a subceiling of 1,200 warheads, of which no more than 650 may be deployed on heavy missiles. In the second phase (until the year 2003 or an earlier date), all multiple-warhead ICBMs are to be eliminated; after that only single-warhead land-based missiles may be retained.

**Table 2: Projected composition of Russian and US SOF under START II (in the Year 2003)**

|                      | System        | Delivery Vehicles | Warheads     | SSBNs (# of SLBMs each) |
|----------------------|---------------|-------------------|--------------|-------------------------|
| <b>RUSSIA</b>        |               |                   |              |                         |
| <b>ICBMs</b>         | SS-19         | 105 (1)           | 105          |                         |
|                      | SS-25         | 500 (1)           | 500          |                         |
|                      | SS-25M fixed  | 300 (1)           | 300          |                         |
|                      | SS-25M mobile | 100 (1)           | 100          |                         |
| <i>Subtotal:</i>     |               | <b>1,005</b>      | <b>1,005</b> |                         |
| <b>SLBM</b>          | SS-N-18       | 112 (3)           | 336          | 7 (16)                  |
|                      | SS-N-20       | 120 (8)           | 960          | 6 (20)                  |
|                      | SS-N-23       | 112 (4)           | 448          | 7 (16)                  |
| <i>Subtotal:</i>     |               | <b>344</b>        | <b>1,744</b> | <b>20</b>               |
| <b>Bombers</b>       | Tu-160        | 10 (12)           | 120          |                         |
|                      | Tu-95MS16     | 22 (16)           | 352          |                         |
| <i>Subtotal:</i>     |               | <b>32</b>         | <b>472</b>   |                         |
| <i>Grand Total:</i>  |               | <b>1,381</b>      | <b>3,221</b> | <b>20</b>               |
| <b>UNITED STATES</b> |               |                   |              |                         |
| <b>ICBMs</b>         | Minuteman-III | 500 (1)           | 500          |                         |
| <i>Subtotal:</i>     |               | <b>500</b>        | <b>500</b>   |                         |
| <b>SLBMs</b>         | Trident-I     | 192 (4)           | 768          | 8 (24)                  |
|                      | Trident-II    | 240 (4)           | 960          | 10 (24)                 |
| <i>Subtotal:</i>     |               | <b>432</b>        | <b>1,728</b> | <b>18</b>               |
| <b>Bombers</b>       | B-52H         | 94 (10)           | 940          |                         |
|                      | B-2           | 20 (16)           | 320          |                         |
| <i>Subtotal:</i>     |               | <b>114</b>        | <b>1,260</b> |                         |
| <i>Grand Total:</i>  |               | <b>1,046</b>      | <b>3,488</b> | <b>18</b>               |

START I did not limit sea-based missiles in any direct way. START II, however, while not prohibiting MIRVed SLBMs, does limit the aggregate number of warheads on sea-based missiles, to 2,160 during the first phase and to 1,700-1,750 during the second phase.

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. Not only are air-launched cruise missiles (ALCMs) counted individually in the nuclear armament of heavy bombers, but so are air-to-surface missiles with a range of less than 600 kilometers and nuclear gravity bombs. This was not the case in START I, which counted each bomber, equipped with short-range missiles and bombs, as one delivery vehicle and one warhead. Aircraft with ALCMs were counted as carrying 10 warheads, despite the fact that they could be equipped with as many as 20 such missiles (for Soviet ALCM heavy bombers 8 warheads were counted on each, although they could carry as many as 16). Under START II the actual weapon loading of each bomber type was agreed upon, and the two sides assumed an obligation not to exceed these.

Additionally, no more than 100 nuclear heavy bombers, which did not carry long-range ALCMs, could be converted to the non-nuclear category. Those converted

should have observable differences from nuclear bombers, which would be monitored by national technical means and by inspections of the other side. Such heavy bombers may again be converted to nuclear roles, but after that may not again be reequipped for non-nuclear missions. All modifications should be reported within 90 days. These measures were designed to prevent the manipulation of the notions "nuclear" and "non-nuclear" and to prevent a secret, rapid, and unexpected buildup of the air component of the strategic force. With the same purpose in mind, nuclear weapons must be stored at least 100 kilometers from air bases with bombers converted for a non-nuclear role.

The START I Treaty provides for procedures to eliminate missiles, launchers, submarines, and heavy bombers, as well as for extensive inspection and verification measures, including the permanent monitoring of the perimeters of certain production facilities, the exhibition of delivery vehicles and the number of their warheads, and challenge inspections with short notification times at strategic bases. 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 are to be simultaneously in force and implemented up to the year 2000, represents a question of some importance. The general rule given in the Preamble of START II is that what is not regulated by the terms of the second treaty is to be regulated by the articles of the first. This order gives the new treaty priority in all matters of dispute. Nevertheless, much of START I remains in force, constituting a broad, legal foundation for START II. In particular, the new treaty does not mention the prohibition on the encryption of telemetric information during the testing of ballistic missiles, insofar as this had been agreed upon within the framework of START I. Another example is the limitation on long-range sea-launched cruise missiles (SLCMs) to 880, which remains in force (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 into storage ashore).

A relatively new, less complicated, and inexpensive disarmament measure allows reduction of the number of warheads by downloading MIRVed missiles (or, simply, removing warheads from their nose cones) instead of by eliminating missiles and launchers. Such a procedure was provided for in the START I Treaty so long as the total number of warheads removed was less than 1,250. The number of downloaded missile types was restricted to two, and the maximum number of warheads removed on any individual missile was limited to two (without changing the "bus"), or to four (when changing the bus).<sup>2</sup> The downloading of heavy ICBMs, however, was prohibited altogether. These conditions were included due to the considerable mistrust that still existed on both sides, and the fear that the other party would secretly upload previously downloaded delivery vehicles in order to achieve a superiority in nuclear warheads.

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2. The procedure involved in removing the bus necessarily entails significant development and production costs as well as flight tests.

In the spirit of greater mutual trust and in the interests of achieving more radical cuts, START II loosened these limitations, although the right to download still does not apply to heavy ICBMs and no more than four warheads may be removed from each downloaded missile. The limits on the aggregate quantity of removable warheads, on the number of types of downloaded missiles, and on the number of warheads allowed to be removed without changing the bus, were lifted or changed. For one type of ICBMs, the number of warheads that could be removed without changing the type of bus was increased from four to five. The relaxation of these limitations enables the Russian side to download some of the existing SS-19 missiles from six warheads to one warhead. Both sides can considerably reduce the number of warheads on SLBMs to comply with the established subceilings without having to resort to the expensive procedures of changing their buses. Also, in the interest of lowering the costs of implementing the treaty, modification of some Russian heavy ICBM silos (for use by light, single-warhead missiles) has been permitted.

It is clear that implementing the deep cuts in strategic forces, which requires the transportation and elimination of missiles, silos, submarines, and bombers, and the storage of thousands of warheads and highly toxic liquid missile fuel, is an expensive endeavor. On the other hand, these expenditures will be counterbalanced by savings gained from maintaining smaller forces; developing, testing, and procuring fewer new systems; and lowering the numbers of weapons deployed. These costs and savings are quite different for Russia and the United States, however, since they have different strategic forces and modernization programs, which will be affected asymmetrically by START II. Besides, similar to problems in calculating the currency exchange rate, industrial contracting systems and financial accounting methods of the two countries are difficult to compare.

The data for the United States are available from various governmental sources.<sup>3</sup> While information on Russia is much more abundant than has historically been the case (due to the present freedom of the press and debates involving the Ministry of Defense in support of the treaty), much of the broad range of available opinions and assessments is arbitrary or outright biased. Some of the data detailed below are based on the unclassified and yet unpublished estimates of well informed sources in Strategic Rocket Forces.<sup>4</sup>

According to preliminary estimates, the direct implementation costs of START II reductions to Russia will amount to approximately 90 to 95 billion rubles (or approximately \$6 billion in 1992 prices) over a period of 10 years (the implementation period of the START II Treaty).<sup>5</sup> Interestingly enough, 75 to 80 billion rubles of these expenditures

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3. See *Implementing START II*, CBO Papers (Washington, D.C.: Congressional Budget Office, 1993).

4. In particular, these data were obtained from "START II Treaty, Balance of Forces and Stability," Report of the Main Research Institute of the Ministry of Defense of the Russian Federation, Moscow, 1993; see also "START II Will Enhance Russian Security: Interview with G. Berdennikov, V. Dvorkin, A. Arbatov," *Izvestia*, 10 April 1993, 15.

5. Converting this to US dollar equivalents is extremely difficult. During 1992, the ruble-to-dollar exchange ratio had increased disproportionately due to price liberalization in Russia. On the other hand, at that time most defense prices were fixed by the state and supplemented by governmental resource

(approximately \$5 billion) would cover the implementation of cuts and limitations under START I (including 35 to 40 billion rubles by 1997). The major component of the 75 to 80 billion rubles—about 75 percent—would go toward the elimination of ballistic missile submarines, which are the least affected by START II. In view of the expiration of their service lifetime and START I reduction, the SSBNs and their missiles are scheduled to be eliminated regardless.

It should be noted that in light of the new state of the strategic and political relationship between the two sides, most of the expensive, ongoing modernization programs of the strategic forces have been canceled or halted at early stages. At present, Russia is deploying one type of light, single-warhead, ground-mobile SS-25 (RS-12 Topol) ICBM and is developing one modified SS-25 system for universal mobile/silo basing mode to be introduced after 1995. The Navy is developing a modified SS-N-20 (RSM-52M) SLBM to be fitted into Typhoon submarine tubes later in the decade. The United States has continued the construction of Ohio-class submarines and the production of Trident-II SLBMs for use in those vessels. Also, a limited number of B-2 bombers are being delivered to the Air Force.

The expenditures on the elimination of armaments will, to a large extent, be compensated for by the savings gained from the cancellation or curtailment of many programs and the reduction of the costs of maintaining and manning the remaining forces. It should also be borne in mind that regardless of START II, Russia would have had to eliminate more than 60 percent of its presently deployed ICBMs by 1995 due to physical obsolescence. By the year 2000 only 40 to 50 SS-19 missiles with extended service life may remain in the strategic forces. All 92 mobile and fixed SS-24 ICBMs would have to be withdrawn due to obsolescence around the year 2003. For the same reason, at that time only 40 to 45 of the newest SS-18 heavy missiles will still be in service, and even these would be eliminated around the year 2005.<sup>6</sup>

Within the framework of START I, and in the absence of START II, the replacement of these obsolete systems by follow-on generations of weapons would be extremely difficult for Russia. In particular, in order to keep up with START I limits it would be necessary (and so it had been planned in the beginning of 1991) to fund the development and testing of modernized types of SS-18, SS-24, and SS-25 ICBMs (the latter two systems in mobile and fixed basing modes) and the follow-on to SS-N-20 and SS-N-23 SLBMs. Even greater expenditures would be required for the production and deployment of these systems, and for their basing infrastructure.

Huge additional appropriations would be necessary in view of the breakdown of military-industrial cooperation among former Soviet republics (two of the three plants manufacturing the latest ICBM systems SS-18 and SS-24 are located in Ukraine). To

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allocation, making the defense sector ruble much more powerful than the civilian economy ruble. By somewhat arbitrary and approximate calculations, 90 billion rubles would be in the range of \$700 million to \$1.2 billion by the free exchange rate, and \$6 billion to \$8 billion with adjustments for the state prices in the Russian defense sector. Hereafter, the approximate 15:1 ratio between defense sector rubles and US dollars, which existed in 1991-92, will be used to convert estimates. All figures are in 1992 prices.

6. See "Interview With Colonel-General I. Sergeev, Commander-in-Chief, Strategic Rocket Forces," 1-2.

organize the production of such systems in Russia would have involved enormous outlays and taken at least a decade, even if the choice had been made (as was planned in 1992) to develop and deploy one unified ICBM type (similar to the SS-24 missile) on railway launchers and in SS-18 silos after the year 2005. Even the SS-25 follow-on had been initially designed to rely on Ukraine for 30 percent of its production and engineering inputs. It required additional technical efforts and funding in 1992-93 to reorganize industrial cooperation in order to confine the program completely to Russian resources.

In addition, significant expenses would have been required for the redeployment of new missiles and bombers from Ukraine, Kazakhstan, and Belarus to Russia (about half of these weapons are of the new generation of strategic systems).

Taking into account the deep economic crisis in Russia and the other republics, the disintegration of military industrial cooperation, the huge budget deficit, and other urgent needs for military reform and conversion, it would have been virtually beyond Russia's capability to avoid unilaterally reducing its own strategic forces below START I levels. At the same time, a large part of the START II expenditures on transportation, elimination, and storage of obsolete weapons would have been incurred regardless, given the scheduled withdrawal of obsolete weapons from active service, albeit with different, less expensive procedures than those envisaged by START II (but without any prospect of foreign aid, either).

The deep cuts envisaged by the START II Treaty remove the need for the massive replacement of old weapon systems. The current program for the foreseeable future includes only the continued deployment of SS-25 ground-mobile ICBMs and the development, testing, and deployment of one SS-25 follow-on ICBM and one SS-N-20 SLBM system. The aggregate savings that will accrue from the reductions in the strategic modernization program under START II, as compared to the program planned under START I, will amount to 100 to 105 billion rubles (approximately \$7 billion) over the next 10 years.

This figure includes some savings that are specifically permitted by START II and are only relevant to the reductions envisaged by this treaty. Due to agreements allowing Russian modification (instead of elimination) of 90 SS-18 silos for deployment of light SS-25 follow-on ICBMs, it will be possible to save about 2 billion rubles (approximately \$130 million). Also, since 105 SS-19 ICBMs may be downloaded to the single-warhead category, the deployment rate for the SS-25 modification will be slowed. The savings on the maintenance of smaller forces under START II will total about 15 billion rubles (approximately \$1 billion) over 10 years.

Hence, the net economic balance of the implementation costs for START II for Russia amounts to savings of at least 20 billion rubles (approximately \$1.33 billion) over the next decade. Of course this is only a tentative figure; the current modernization program may be revised in either direction, but a large part of the expenditures on reductions would have been necessary regardless of START II and even regardless of START I. Due to the disintegration of the Soviet military-industrial complex and the deepening economic and financial crises in Russia, outlays for modernization may be much lower even without the new treaty. On the other hand, rapid force reductions, in accordance with dismantlement procedures and schedules established by the treaty, will require some additional

appropriations, and the flexibility in restructuring forces (as will be clarified below) will be restricted as well, with additional resulting expenditures.

Nonetheless, the general assessment of START II should be that the treaty provides Russia with an opportunity to implement force reductions and to cut its modernization outlays within the framework of bilateral reductions, rather than through unilateral cost cutting measures. The questions as to whether these measures are balanced and equitable, however, is a separate and quite complicated issue that has caused significant controversy in Russia, as is discussed below.

It is obvious that compromise and mutual concessions are essential in order to reach any agreement. In spite of the complexity and variety of strategic assessments, the trade-off between Moscow and Washington that is to be implemented under START II (taking START I as the point of departure) is quite simple.

The United States has, for the first time in the history of strategic negotiations, agreed to limit its sea-base missile forces (the main component of the US triad), which make up 55 percent of total US warheads. The subceiling of 1,700–1,750 warheads established by START II is one third the existing number of US SLBM warheads and one half the level envisaged by the United States under the terms of START I. Trident-II missiles will now carry an average of four warheads instead of eight. In addition, general economic and strategic considerations (only indirectly related to START II) have prompted the United States to curtail the production of the high-yield W-88 warheads at approximately 400 instead of about 3,500. Consequently, the bulk of the missiles on 18 Ohio class submarines will be equipped with W-76 warheads possessing one-fourth the yield of W-88 warheads.<sup>7</sup>

The combination of START II reductions and unilateral US restraint will significantly reduce US counterforce capability against Russian fixed and mobile launchers and command centers.

Another important US concession is that for the first time the nuclear weapons of heavy bombers will be counted according to their actual loading capabilities, instead of according to the arbitrary and superficial coefficients used by the START I Treaty. Such artificial counting measures allowed the United States to retain nearly 4,000 warheads in ALCMs, short-range missiles, and gravity bombs.

Additionally, in view of the ban on multiple-warhead ICBMs, 50 of the most advanced US "Peacekeeper" MX ICBMs (carrying 500 warheads), which have the greatest capability of destroying hardened sites (ICBM silos, command bunkers, nuclear storage sites) because of their combination of yield, targeting flexibility, and guidance accuracy, will be eliminated by the year 2003. The number of warheads on 500 Minuteman-III ICBMs,

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7. Depending on decisions by the Clinton administration, the program may be even further curtailed. The basic options presently being discussed include canceling the backfit of the first eight SSBNs of this class with Trident-II D-5 missiles, reducing the SSBN fleet size by retiring the first eight submarines early beginning in the years 2001, reducing the number of tubes per submarine from 24 to 12 and cutting the D-5 procurement program. See *Rethinking the Trident Force*, CBO Study (Washington, D.C.: Congressional Budget Office, July 1993).

including those on 300 missiles equipped with an MK-12A upper stage package, will be reduced from 1,500 to 500 (i.e., from three to one on each missile), and their counterforce applicability will thereby be downgraded. Finally, a number of older US submarines and bombers will be retired from the strategic forces several years earlier than previously anticipated.

Despite these US concessions, however, Russia made even greater steps toward compromise. The elimination of, and ban on, land-based MIRVed ICBMs will have even greater strategic, operations, and technical-economic consequences for Moscow. Traditionally, land-based missiles have formed the most important and largest component of the Soviet strategic forces. About 60 percent of all strategic warheads were concentrated on MIRVed ICBMs by the end of the 1990s (the US number was less than 19 percent, according to the START I counting rules).

The ban on MIRVed ICBMs, in combination with the aggregate levels and sublevels established by START II on warheads, constitutes the primary problem for Russia. Compared to the present force levels, the treaty envisages a 66 percent to 75 percent proportional reduction of warheads for all three components of the US triad. The remaining forces of ICBMs and most modern sea-based and air-based systems will last the United States well into the next century.

In contrast, Russia will have to eliminate the overwhelming and most modern portion of the principal component of its triad: land-based, multi-warhead ICBMs would be reduced altogether by 80 percent in terms of delivery vehicles and by 95 percent in terms of warheads. Simultaneously, the Russian ballistic missile submarine fleet will be reduced by about 66 percent, the number of SLBMs by 50 percent, and SLBM warheads by 33 percent.

Yet, as pointed out above, the Russian reductions would take place regardless of START II, due to the terms of START I and the physical obsolescence of the bulk of the SSBN fleet, which was constructed primarily from the 1960s to the early 1980s. Even the most modern Typhoon and Delta-IV boats will be decommissioned two to four years after the START II implementation period (the year 2003). No new SSBN construction is planned for the 1990s and is unlikely until the 2010s due to economic constraints.

As for the air-based component, it remains unaffected by START II and would remain unchanged, were it not for the obsolescence of more than 70 percent of the airplanes deployed on Russian territory. Production of heavy bombers was suspended in 1992 and there are currently no plans to reopen production lines.

In view of the above considerations, START II has created the prospect of a huge "breach" in the structure of the Russian strategic forces by eliminating ground-based MIRVed missiles. It would be virtually impossible to fill this vacancy by expanding the sea-based or air-based legs of the triad for the reasons mentioned. Furthermore, maintenance costs per deliverable warhead are 2 to 3 times higher for SLBMs and about 10 times higher for heavy bombers than for silo-based MIRVed ICBMs.

This presents Moscow with a difficult choice: either maintain its traditional reliance on ground-launched ICBMs or undertake radical restructuring of the triad and adopt a new structure similar to the US triad.



The first option would require the deployment of 1,200 to 1,400 single-warhead ICBMs (currently, there are only about 300 new missiles of that type) in place of the MIRVed missiles to be eliminated. Under the aggregate START II ceiling of 3,000–3,500 warheads, this would then constitute 50 percent of the total number of permissible warheads, which is approximately the same ratio planned under START I. On the other hand, it would require enormous outlays of more than 500 billion rubles (\$33 billion), which will likely be unbearable for Russia in the next decade.

The second option, more attractive from an economic point of view, is to freeze this component's levels at the 400 warheads currently available (300 on the SS-25 and 105 on the downloaded SS-19 ICBMs) rather than build new ICBMs. One drawback of the second option is that it would leave a shortfall in actual warhead numbers compared with the levels permitted under START II. Inasmuch as the sea-based missile forces are limited to a subceiling of 1,700–1,750 units and the air-launched component (for reasons mentioned above) will barely accommodate 500 weapons, the aggregate number of Russian warheads would be no more than 2,650, about 25 percent less than the number of US warheads. Furthermore, soon after the year 2003, the number of Russian strategic offensive weapons would be further reduced as obsolete weapons are taken out of operational service.

This, however, is not the main problem. Given current circumstances, Russia could agree to such an asymmetry, all the more so since the United States currently has an almost 30 percent advantage in actual warhead numbers. Far more important is the fact that the deep reduction of the share of ICBMs in the triad (from 60 to 15 percent) will contradict the accepted strategic concepts, operational plans, and capabilities of the command-control systems of the Ministry of Defense. It would also violate its accepted notions of parity, stability, and sufficiency.



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## Strategic Stability and Sufficiency

The existing Russian strategic concepts are, to a large degree, objectively conditioned and easily explainable. In light of the geostrategic situation and its technical shortcomings, the sea-based component of Soviet forces has always been considered extremely vulnerable to the anti-submarine defenses of the United States and its allies and lacks reliable and permanent communications with its command. The air-based component plays an even more modest role; its air bases are extremely vulnerable, and it has experienced difficulties in overcoming North Atlantic Treaty Organization (NATO) and US anti-aircraft defense systems. At present, modernization of these two legs of the triad has virtually been halted, while a growing percentage of the aircraft and SSBNs are becoming obsolete and technically worn. Hence greater Russian reliance on these legs of the triad does not appear to be a viable option.

At the same time, preserving the roles, the operational and strategic concepts, and the composition of the ICBM force unchanged is not only undesirable but indeed infeasible for Russia. Having at one time deployed nearly 7,000 warheads and 1,400 ICBMs (most of them MIRVed and silo-based), the Soviet High Command had contingency plans for a massive strike against the strategic forces of the United States, other NATO states, and China (as well as against their general-purpose force sites and industrial areas). Thousands of warheads were expected to hit these targets. The operational cornerstone of this plan was a "launch on warning" strike (*vstrechny, ovetno-vstrechny udar*) or, simply, the missiles would be launched immediately after detecting an attempted preemptive strike.

The leading role of the silo-based ICBMs was closely linked to the launch-on-warning (LOW) concept. The ICBMs were becoming increasingly vulnerable to a US strike at their silos due to the increasing accuracy and warhead yield of US ICBMs and SLEMs, and thus could not survive to deliver a purely retaliatory strike. At the same time, the silo-based ICBMs were still best suited for LOW because of their readiness, availability, high alert rate, and reliable, redundant, instant two-way communications systems. Also, these systems were equipped with the greatest number of powerful and accurate warheads, the most effective unauthorized launch prevention systems, and were the least expensive of the triad components to maintain and man.

This strategy, however, was always ill-conceived from the broad view of rational security trade-offs and political control over nuclear weapons employment.<sup>8</sup> The Soviet Union and the world were lucky that this policy was never really put to the test in a situation in which the outbreak of a nuclear exchange was a realistic scenario. (The only such flashpoint was the Caribbean crisis of October 1962, which occurred before missile forces were either deployed on a massive scale, or based on this operational concept).

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8. Particularly important is the trade-off between the risk of weaker retaliation by a delayed strike and the risk of inadvertent or accidental nuclear war as a result of the hair-trigger launch-on-warning posture in a crisis scenario.

In view of the short flight time of ballistic missiles (15 to 30 minutes), the LOW concept virtually deprives the political leadership of the opportunity to make a considered decision and increases the dangers of unleashing a nuclear war in crisis situations, as a result of technical failure, unauthorized action, or miscalculation by the leadership.<sup>9</sup>

It should be added that today Russian capability to deliver a LOW strike is further diminished. Of the eight early-warning phased array radar stations, five are located in other former republics of the USSR. It is unlikely that they could be relied upon in a crisis situation. Early warning by means of satellites, on the other hand, is fraught with serious technical problems and limitations.

In a world where missiles and weapons of mass destruction are increasingly widespread, LOW planning would be a recipe for disaster. It would play right into the hands of those who seek to provoke a nuclear conflict between the great powers. During the Cold War years, reliance on the LOW concept was, if not justifiable, at least understandable. Today, when both sides are drawing back from the brink of war, it would be absurd and irresponsible to continue to adhere to this strategy.

A reorientation of the strategic plans, command systems, and structure of the forces toward the concept of a purely second retaliatory strike has become essential. A LOW strike may only be contemplated as a reserve "insurance" option, but never again as a primary strategy. The massive targeting of an adversary's strategic arsenal should also be abandoned, inasmuch as this inherently implies first strike or protracted nuclear war planning. Both variants are militarily unlikely and, for the foreseeable future, politically unthinkable. The list of targets should be shortened from thousands to hundreds, and subsequently to dozens, bearing in mind the new political and strategic situation and more realistic assessments of the consequences of using even a small number of nuclear weapons.

START II does not place any serious obstacles in the way of such a general reappraisal of Moscow's (and to a large degree Washington's) military doctrines, strategies, operational planning, and force structure. On the contrary, in some respects it makes such a reappraisal easier.

Indeed, it is the view of the authors of this study that for all the loose talk about the United States and Russia no longer being enemies, (and about intentions not to target one another and about the irrelevance of nuclear deterrence, second-strike stability, and sufficiency mentality), the new reality for the 1990s will probably be quite different. Rather, under the best circumstances the essence of the changing strategic relationship between Russia and United States should rest on abandoning the concepts and forces for preemptive or launch-on-warning strikes, the high-alert postures, the extensive counterforce targeting, the entanglement in across-the-board competition in weapon systems, the absurdly high criteria for inflicting damage, and, therefore, the policy of nuclear brinkmanship and paranoid fixation on each other. The two countries are still

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9. The dangers of catastrophic failures of strategic force employment procedures and their implications are elaborated comprehensively in B. Blair, *The Logic of Accidental Nuclear War* (Washington, D.C.: The Brookings Institution, 1993).

far from allies, but they should be able to stop being principal strategic rivals and establish an expanding measure of partnership in curtailing the arms race, enhancing strategic stability, and reducing the shadow of nuclear deterrence over the rest of their political and strategic relationship.

Until now, the only commonly accepted definition of the notion of strategic stability was formulated in 1990, during the Bush-Gorbachev summit meeting: removal of first strike capabilities by lowering the concentration of warheads on delivery vehicles and giving preference to survivable weapons systems. This is the same logic followed by the START II Treaty. Land-based MIRVed ICBMs are to be replaced by single-warhead missiles, after which attack would be irrational (it would be a self-disarming strike in which more warheads would be expended than destroyed). Besides, single-warhead missiles do not pose a counterforce disarming threat to the other side and, therefore, do not provoke a preemptive strike.

With deep cuts in the number of warheads, particularly by downloading ICBMs and SLBMs, the concentration of warheads on delivery vehicles will be reduced. Under START I, the average ratio of warheads to delivery vehicles would decrease from 6:1 to 4:1, while under START II it will be further reduced to 2:1. Survivable weapons (mobile land-based ICBMs and SLBMs) would play a larger role under START II.

This is, however, a theoretical scheme that does not replace decisions (based on a number of operational, technical, and economic considerations) regarding the concrete character of the reduction, restructuring, and development of the strategic forces. The authors are of the view that within the framework of the START II Treaty, it would be enough for Russia to have 800–1,000 single-warhead ICBMs, with about 60 percent on mobile launchers. Missiles in silos, which can be launched on warning, would play an insurance role for the mobile systems, which require more time for operational deployment.

By the year 2003, within the subceiling of 1,700–1,750 warheads, 25 of the relatively new Russian submarines, carrying up to 424 SLBMs (with Typhoon SS-N-20 missiles downloaded from 10 to 6 warheads), could be kept. The failure to extend the service lifetime of the Delta-III SSBNs (which may be decommissioned starting in 1998) would yield another option: 18 to 20 submarines with up to 344 missiles (with SS-N-20 downloaded from 10 to 8 warheads). In order to ensure more reliable command and control, protection by naval forces, air forces, and anti-aircraft defenses, as well as effective maintenance, these submarines could be assigned to the Northern Fleet for combat patrol in the Arctic seas and under the polar ice cap.

Sufficient money should be invested in the early-warning, command-control and communications systems (including expenditures on a new super-hardened command post and redundant and highly survivable relay and communication systems supporting mobile missiles and submarines at sea). These could best be developed on the basis of existing designs and under the integrated operational control of the Strategic Rocket Forces. It might also be possible to cooperate with the United States in the field of space surveillance and the early warning of missile launches.

It is therefore clear that the structure of the Russian forces will change considerably from its present state, but it should not necessarily imitate the US triad. Under the terms

of the START II Treaty, the future Russian strategic arsenal could be divided over the triad in the following manner: 800–2,000 warheads on single-warhead ICBMs, 1,700–1,750 on SLBMs, and 500 on heavy bombers by the year 2003. After that, if new bomber or submarine types are not introduced rapidly, the slack created by withdrawn obsolete weapons might be taken up by additional single-warhead ICBM deployments.

The START II Treaty has virtually no effect on the structure of the US triad, which, in all probability, will consist of Minuteman-III ICBMs (downloaded to single warheads), 18 Ohio-class submarines carrying 432 Trident-II SLBMs, and 90 B-52H and 20 B-2 bombers. Other options include leaving 8 of the Ohio class boats with Trident-I missiles or deploying 14 instead of 18 SSBNs and retaining five warheads on each of their missiles.<sup>10</sup>

The probable nuclear arsenal of the United States will be composed as follows: 500 ICBM warheads, 1,728 SLBM warheads, and 1,260 heavy bombers warheads.

The structure of the US triad will therefore change much less and will retain its capability for a counterforce and countervalue strike and its relative advantage over Russia (though somewhat less than the current superiority) in being able to hit a broad range of military and industrial targets. In spite of the expected relative US advantage in force survivability and counterforce capability, there can be no question of the possibility for a disarming strike against Russia. In any conceivable scenario (provided no large-scale strategic ABM systems are deployed), the Russian forces would be able to deliver 200–300 warheads to their targets in a retaliatory strike.

It should, moreover, be borne in mind that no international treaty can guarantee security and fully replace a sensible and optimized military policy and force structure. The only question is, can a treaty contribute to such a policy and make its implementation easier and less costly?

Considered in this light, it would seem that Russia's transition to a new structure and new levels of its triad, corresponding to the new foreign and domestic (particularly, economic) realities, generally fits in with the provisions of START II. Nevertheless, certain START II aspects could have made a greater contribution to stability and required the restructuring of the Russian strategic forces at less expense.

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10. Other options are also being discussed. Decisions of the Clinton administration on the Trident program would also affect other legs of the triad. See note 7.

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## Deficiencies of the START II Treaty

The deficiencies of START II, in the view of the authors of this study, can be divided into three areas. First, the reductions applicable to both sides are insufficient when viewed in relation to the new political and security relationship. Second, the limitations imposed by START II are excessively stringent as applied to Russian forces, compared to their effects on US forces. Third, the restrictions applied on US forces are too lenient, compared to those on Russian forces.

The first area of deficiency is illustrated by the aggregate force ceiling. The initial Russian START II negotiating position envisaged a reduction of forces on both sides to a level of 2,000-2,500 warheads, whereas the United States proposed a reduction to 4,500. An equitable compromise would suggest 3,000-3,500 units—a classic diplomatic solution in the tradition of previous negotiations. The difference in this case, however, is that the Russian proposal involved a question not only of deeper cuts, but of a radical restructuring of the strategic relationship between the two sides, which found expression in the historic consent by Moscow to eliminate multiple-warhead land-based ICBMs.

This historic concession, from Russia's point of view, gave Russia grounds for insisting on a lower ceiling than that indicated by a "traditional equitable compromise." This would have balanced the elimination of Russia's MIRVed missiles and reduced Russia's need to deploy numerous single-warhead ICBMs to sustain basic requirements of Russia's security.

Would it have been possible to effect even deeper cuts within the same time scale and at acceptable cost? The idea of completely removing the warheads from the missiles earmarked for destruction and storing them in central storage sites is extremely attractive. The ICBMs themselves, fitted with warhead simulators, could then be left in their silos until their turn came to be taken to the destruction facilities. Apparently this option did not receive due attention in 1992, and its only hope is that it might be included in the agenda for the follow-on talks.

The second area of deficiencies with START II is illustrated by the fact that at the June summit meeting in 1992, the Russian negotiating team appeared to agree too easily to the complete ban on both silo-based and mobile MIRVed ICBMs. There are considerable operational and technical doubts concerning the rail-mobile SS-24 system. The life span of these ICBMs expires around the year 2003, and the technical maintenance and extension of their service lifetime depends almost entirely on Ukrainian facilities (except for the guidance system, which is produced in Russia). In accordance with a unilateral initiative by Moscow (enacted in October 1991), these missiles are kept at their railway bases, and their number has been frozen at 36 launchers (12 combat train complexes each at three bases in Bershet, Kostroma, and Krasnoyarsk).

Nevertheless, in agreeing to the elimination of this system after the year 2003 pursuant to START II, it would have made sense to include the possibility of building, in the future, a lighter mobile MIRVed ICBM system with a restricted number of warheads. With regard to strategic stability, such a system would be no more dangerous than the

most modern US multiple-warhead SLBMs (Trident-IIIs). When operationally deployed in dispersed formations, road-mobile ICBMs are less vulnerable and simultaneously less suitable for first strikes than silo-based MIRVed ICBMs. It would be cheaper and, from an operational point of view, easier for Russia to fill out its non-SLBM warhead START II quota after the year 2003, at least partially, with new mobile light MIRVed ICBMs rather than with single-warhead missiles, particularly since the latter are much more expensive and require more servicing personnel per warhead.

One option, preferred by some Ministry of Defense agencies, would have been a universal common missile, close to SS-24 parameters (about 90 tons launch weight), jointly developed and produced by the Russian Strategic Rocket Forces and the Navy for deployment on rail-based launchers, in fixed silos (including those left empty by eliminated SS-18 missiles), and on Typhoon submarines. Silo missiles could be restricted by verifiable agreement (i.e., having a specific bus) to single warheads, mobile launchers to 6-10 warheads, and SLBMs (depending on other sea-based missile loading) to 10, 8, or fewer warheads.

Another option, favored by the authors of this study and supported by a number of civilian strategic and technical experts, is to develop a uniform missile, similar to the SS-25 (with 40 tons launch weight), for deployment in road-mobile launchers (with three warheads), in silos (downloaded to a single warhead, like the Minuteman-III ICBM), and in Delta-IV submarines (with four warheads, like the Trident-I SLBM).<sup>11</sup> Many naval experts prefer the Delta-IV submarine to the Typhoon, citing it as a more modern, efficient, less detectable, and less expensive vessel (the latter being particularly relevant if it is to be contemplated as the basic design for a new class of SSBN to be introduced after the year 2005).

Presently, the Strategic Rocket Forces and the Navy apparently are each planning their own new missile type (successors to the SS-25 and SS-N-20), which will entail substantial additional expenditures and, in the case of the Navy, does not appear well thought out to the authors of this study. This is at least partially a result of specific START II limitations.

It would be worthwhile to return to this question at follow-on talks as part of a general change in both sides' approach to their strategic relationship. The traditional distinction between strategic weapon systems, primarily based on the simplistic principle of their deployment mode, no longer corresponds either to present strategic realities or to the new strategic relationship between the United States and Russia when assessing the contribution of the various systems to stability. Today, emphasis should be placed on more sophisticated and integrated criteria to assess the contribution of various nuclear weapon systems to stability. New criteria should include counterforce capability, survivability, efficiency of control systems, non-reliance on high-alert status and the LOW

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11. This option might be feasible if refitting Delta-IV SSBNs for solid-fuel SLBMs, instead of the liquid-fuel SS-N-23 missiles, turns out to be affordable. Also, it might eventually be worthwhile to similarly retrofit Typhoon SSBNs as well.



concept, among others. In accordance with these criteria, additional follow-on quantitative and qualitative limitations should be agreed upon by both sides.

It is also difficult to justify stringent limits on the downloading of MIRVed ICBMs (in contrast to the downloading of SLBMs) to convert them into single-warhead missiles. First, it is prohibited to download either mobile or silo-based SS-24 missiles (46 in Russia) from 10 warheads to 1 warhead. Second, only 105 of 170 SS-19 ICBMs now deployed in Russia may be downloaded and converted to single-warhead missiles. This would require advanced deployment of approximately 110 additional single-warhead ICBMs (35 to 40 billion rubles, or \$2.5 billion) to maintain the same warhead level. Third, of 204 SS-18 heavy missile silos retained under START I, or 154 located in Russia, only 90 may be converted to house a fixed-based successor to the SS-25 light ICBM, which will preclude additional savings of 2 billion rubles (\$133 million).

A future agreement to download more Russian ICBMs (except for heavy types) and to modify more silos for single-warhead missile use might reduce the deployment costs of new silo- and mobile-based single-warhead missiles by about 25 percent (60 billion rubles, or \$4 billion). This would also be advantageous to the United States, as the existing downloaded Russian missile types would be 25 percent less effective in a counterforce strike than new ones, that have an increased accuracy and greater warhead yield, while the stabilizing retaliatory countervalue strike capability would be 15 percent larger.

The third main area of START II deficiencies consists of the fact that the restrictions applied to US forces are too lenient, compared to those on Russian forces. Russia's agreement to give up MIRVed ICBMs, in the view of the authors of this study, could and should have been matched by greater US concessions in regard to limitations on its own forces. For example, a more equitable resolution would have been reached if the agreement had prohibited the United States from refitting its first eight Ohio-class submarines (now equipped with Trident-I SLBMs) with the more powerful Trident-II missiles. This could have been implemented by a commitment on both sides to limit the number of "medium" SLBMs (above 40 tons in launch weight, i.e., heavier than SS-N-23 and Trident-I) to 120 missiles (the complement of five Ohio or six Typhoon boats). A less stringent alternative might have been to limit the number of each side's warheads to 720-960 (for example, to limit Russia to 90-120 SS-N-20 missiles downloaded to eight warheads, or to 120-160 missiles of this type with 6 warheads each, and to limit the United States to 180-240 Trident-II SLBMs downloaded to four warheads).

It might be worthwhile to agree on some technical measures that would make it more difficult, transparent, and time-consuming to upload Trident-II SLBMs in excess of the mandated four warheads. Since five recently constructed SSBNs have already been equipped with Trident-II missiles with an eight-warhead loading capacity, this limitation could simply be applied to SLBMs produced for the remaining five submarines of this class. This would reduce the US potential advantage in break-out capability and in potential counterforce hard target kill capability. The high costs of providing for the survivability of Russian mobile and fixed-based ICBMs and their command and control systems would accordingly have been reduced.

The US decision to stop production of high-yield W-88 warheads contributes to this end, but fails to alleviate the problem completely. The number of warheads that have already been manufactured is kept secret by the US government. The Russian Ministry of Defense assessment is that approximately 900 warheads have already been produced, whereas unofficial US statements indicate that there are only 400 warheads. There is no provision or possibility for Russia to verify the unofficial US statements on the number of its W-88 warheads.

An agreement to stop production of fissile materials and manufacturing of nuclear weapons might also solve this problem, but it would require a great deal of time and a firm commitment to new negotiations on an extremely complicated and delicate area. Technical restrictions on the Trident-II MIRV bus or an agreement to store downloaded strategic missile warheads in central storage sites far from ICBM and SSBN bases, with provisions for permanent perimeter monitoring and on-site inspections, might provide yet another solution to the problem of unequal START II limitations.

Finally, in view of the relaxation of the rules on the conversion of bombers from nuclear to non-nuclear types and vice versa, it would probably have been more effective, for various reasons, to ratify and include the 1992 unilateral initiatives of the United States and Russia on the lowering of heavy bomber alert levels and the unloading and storage of their warheads. Bombers can no longer play a retaliatory strike role in a surprise attack scenario because of long flight times and vulnerability when off alert. When preparing for a first strike, they must be put on high alert well in advance. An agreement on the centralized storage of the heavy bomber weapons at a distance of no less than 100 kilometers from their air bases would increase the warning time considerably, as strike preparations would entail returning the armaments to the air bases. Furthermore, this would reduce the primary threat to the mobile land-based ICBMs of the other side.

Insofar as all limitations apply equally to both sides, the suggested measures would have similar effects on US and Russian forces and programs. For instance, the limits on SLBM bus loading capacity, the subceiling on the number of warheads permitted for the most powerful sea-based missiles, the requirements for the centralized storing of weapons, and the perimeter monitoring of storage sites with downloaded missile warheads and bomber weapons would apply to both sides. For a number of complementary reasons described below, these equal restrictions will be beneficial to deeper arms reduction, lowering the alert status of forces, and preserving centralized control over the nuclear forces of the former USSR.

The above drawbacks to START II, as well as other deficiencies of secondary importance, do not outweigh the treaty's overall virtues, but rather reflect shortcomings in the formulation and implementation of the new Russian leadership's arms control policy.<sup>12</sup> As a result, the treaty has been subject to harsh criticism by the Russian

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12. These more minor deficiencies include the pointless "bracketing" of levels and sublevels. Obviously a lower limit is unnecessary when both parties can maintain fewer forces if desired.

parliament and strategic community, thereby placing its ratification prospects in doubt during the current political stalemate.

With a more open, orderly, and rational policy-making mechanism in Moscow, many of the issues and suggestions mentioned above could be addressed during the course of follow-on negotiations with the new US administration. Furthermore, visible progress in this direction would help smooth the ratification of START II in Russia. By making sweeping concessions in the START II negotiations and by following the lead of US foreign policy in 1992-93, Moscow has weakened its bargaining position greatly for the next stage of arms reductions talks. Consequently, much will depend on the new US administration's sense of fair play and understanding of the fact that henceforth achieving specific strategic advantages should be secondary to the more important task of formulating a new, equitable, and stable strategic relationship between the two nations, and achieving solid public and legislative support of this relationship in both countries.



## The Four CIS Republics and the Soviet Nuclear Legacy

The Soviet nuclear forces were created as a single entity. The strategic nuclear forces and their support and control structures, the early-warning and space-surveillance systems, the nuclear production infrastructure, and the maintenance facilities were all built without regard for administrative and republican borders.<sup>13</sup>

The SOF installations of the former USSR are located on the territory of Russia (the only successor state with an internationally recognized nuclear status), as well as on the territories of Belarus, Kazakhstan, and Ukraine. A considerable portion of these forces—about one-quarter of the ICBMs, one-third of the ICBM warheads, and more than three-quarters of the heavy bomber armaments—are deployed outside Russia. (For detailed information on the distribution of SOF installations over the republics see Table 3 below).

The creation of the Commonwealth of Independent States (CIS) in December 1991 initially raised hopes for the cooperative and orderly transformation of the Soviet empire into a new community of states, based on genuine and common economic, humanitarian, and security interests (including the integrity and safety of the former Soviet nuclear arsenal). The domestic political pressure of nationalist coalitions in all four republics, however, created great obstacles to the amicable rearrangement of interstate relations. This is particularly true for the nuclear issue. Even the initial CIS agreements reflected the underlying contradictions and misperceptions regarding the nuclear issue and were certain to backfire.

**Table 3: Deployment of strategic delivery vehicles and warheads of the SOF over the CIS republics**

| Republic   | Type of SOF   | Delivery Vehicles | Warheads |
|------------|---------------|-------------------|----------|
| Russia     | ICBMs         | 1,064             | 4,278    |
|            | SSEBs/SLBMs   | 62/940            | 2,804    |
|            | Heavy bombers | 117               | 357      |
| Ukraine    | ICBMs         | 176               | 1,240    |
|            | Heavy bombers | 36                | 508      |
| Kazakhstan | ICBMs         | 104               | 1,040    |
|            | Heavy bombers | 40                | 370      |
| Belarus    | ICBMs         | 54                | 54       |

Notes: Figures are according to the counting rules of START I. Bomber weapons are measured according to actual loading. By 1993 the number of ICBMs in Belarus increased to about 80.

Source: "Nuclear Armaments and Republican Sovereignty." *Mezhdunarodnie Otnosheniya*, Moscow, 1992, p. 33.

13. See T. Cochran, W. Arkin, R. Norris, and G. Sands, "The Nuclear Armament of the USSR," in *Nuclear Armaments and Republican Sovereignty*, ed. A.G. Arbatov (Moscow: Ministerstvo Mezhdunarodnie Otnosheniya, 1992).

In the Alma-Ata Agreement on December 22, 1991, the four republics created the Joint Strategic Armed Forces (later renamed the Unified Strategic Forces) in order to ensure the collective security of all the CIS states.<sup>14</sup> Belarus and Ukraine committed themselves to the complete elimination of nuclear weapons on their territories (Article 4) and to join the Non-proliferation Treaty (NPT) as non-nuclear states (Article 5.1). (Kazakhstan did not agree to the previous articles.) At the same time, all four pledged to abide by the principle of no-first-use of nuclear weapons (Article 2) and accepted the non-transfer obligations of the NPT (Article 5.2), although these articles should have applied only to nuclear states.

The three smaller republics also undertook commitments to assure the withdrawal of tactical nuclear weapons from their soil to central storage sites (allegedly in Russia) by July 1, 1992, and for their eventual dismantlement under joint control (Article 6). Participation in the actual withdrawal of these nuclear weapons and their dismantlement is also a potential contradiction of the non-nuclear status of these states. Conceivably, one of these states could prevent the withdrawal and claim control of the weapons, as though the agreement implied some inherent property and handling rights over the weapons. This was exactly what occurred in early 1992, when Ukraine interrupted the withdrawal of tactical nuclear munitions to Russia.

Article 7 of the Alma-Ata Agreement committed each state to ratify START I in its Supreme Soviet. This, too, was hardly consistent with the non-nuclear status of the three smaller republics, implying once again that the SOF on their territories belonged to them, and that they were entitled to make decisions on which arms to eliminate and which to retain under the treaty's provisions, to implement special elimination and conversion procedures, to observe the schedule of reductions, to assure US verification capabilities (including the implementation of special cooperative operational, support, and maintenance regimes of the SOF), and to claim the same rights in relation to US forces.

All of these provisions could be interpreted as providing the three republics a legitimate basis on which to demand direct participation (and all the consequent political benefits that participation entails) in the follow-on negotiations with the United States. Shortly after signing the agreement, both Ukraine and Kazakhstan advanced this idea on several occasions, implying that they would insist on retaining a part of the SOF on their territories under the START Treaty.

In the December 30, 1991, Minsk Agreement, one week after the Alma-Ata Agreement, the parties recognized the need for the joint command of strategic forces, and the need to maintain a unified control of all nuclear weapons (Article 3).<sup>15</sup> With that purpose in mind, the Combined Strategic Forces Command was created. It was agreed that the decision to use nuclear forces was to be taken by the president of Russia only with the consent of the three other leaders (Article 4).

After numerous unsuccessful attempts to sort out the nuclear issues at CIS sessions, the presidents of Ukraine and Kazakhstan visited the United States in May 1992 and

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14. *Izvestia*, 23 December 1991.

15. *Krasnaya Zvezda* 31 December 1991.

committed themselves to the elimination of the strategic weapons on their territories (Ukraine by the end of 1994 and Kazakhstan by the end of the START I implementation period).

Soon afterward, in Lisbon on May 23, 1992, the leaders of Russia, Ukraine, Kazakhstan, Belarus, and the United States signed a protocol to START I, committing the CIS members 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."<sup>16</sup> In addition, the three smaller republics presented official letters to the US president, assuming upon themselves the obligation to adhere to the Non-proliferation Treaty and to guarantee the elimination of nuclear weapons on their soil.

Despite the political significance of these commitments, they have created new uncertainties from a legal point of view. Dates for joining the NPT were not agreed upon and additional reservations were made, including Kiev's demand that its "nuclear charge components" not be used for the re-production of weapons (a condition that was irrelevant to START I and is unverifiable in any case). Moreover, the Ukrainian date for missile elimination was tied to the seven-year treaty implementation period, undermining the previous commitment to complete the process by 1994. The initial hasty arrangements on nuclear weapons and the growing contradictions between the republics have since made a strategic, political, and legal puzzle of the CIS nuclear arsenal.

To begin with, the Russian president, according to the Alma-Ata and Minsk agreements, is the only CIS leader with the "nuclear button" authority (i.e., the technical control over launch capability regardless of the geographic deployment of the weapons). The Russian state, however, has not been recognized by Ukraine to be the owner of weapons located outside Russia. Neither Russia nor the CIS Combined Strategic Forces Command (ostensibly responsible for their maintenance and launch) is capable of redeploying, withdrawing, dismantling, or modernizing these weapons without the permission of the governments of the three other republics. While Ukraine may be capable of physically enforcing this agreement, Belarus and Kazakhstan can only do so through political and diplomatic means.

Furthermore, Ukraine, and to a degree Kazakhstan, actually claim property and some disposition rights over the SOF on their territory, but they are incapable of controlling their use, maintenance, or safety. Their major concern is that while being recognized as sovereign states, they do not have the capability to prevent an unsanctioned Russian ICBM launch of missiles from their territory (except through some crude measures, including the disruption of communication lines, the placement of a truck on missile silo roofs, and the simple destruction of an ascending missile).

It is clear that all four republics have legitimate claims to ownership rights over existing strategic forces, since all participated in the development, testing, production, and deployment of those weapons over the last five decades. But while that may legally

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16. Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms.

apply to the SOF as a whole, there is no legal, economic, or other basis on which to divide ownership rights according to location. Ukrainian plants in Pavlograd and Dnepropetrovsk produced missiles (SS-18 and SS-24) tested and deployed in Russia, Ukraine, and Kazakhstan. Russian plants in Moscow and Votkinsk produced ICBMs (SS-19 and SS-25) located in Russia, Ukraine, and Belarus. Ukraine manufactured guidance packages for the SS-19 and SS-18, but gyroscopes for the SS-18 and entire guidance systems for the SS-24 were supplied by Russia. The SS-24s were also tested at the Russian test range in Plesetsk.

In addition, according to the existing agreements, the SOF are formally controlled by the Combined Strategic Forces Command, but in fact, all the republics believe the Russian authorities to be in control. This follows logically, however, since only President Boris Yeltsin possesses the "nuclear button," all high-level command structures are in Moscow, and central underground command bunkers and airborne command posts are also located in Russia.

Russian authorities have confirmed these suspicions by making unilateral decisions regarding the nuclear weapons. These decisions include Yeltsin's early 1992 declaration not to target missiles at US cities, and his proposals on deep reductions of the SOF and development of global anti-missile protection (to be deployed jointly with the United States). Similarly, the framework of START II was built in Washington at the June summit without prior Russian consultations with the republics.

These actions were immediately noticed and condemned by the other presidents. "Strategic weapons belong to the CIS, hence the Russian president cannot eliminate weapons that he doesn't have," said Ukrainian President Leonid Kravchuk.<sup>17</sup> Kravchuk also expressed concern that the missiles might be retargeted against Ukraine and that an ABM system might be designed for use against his state.<sup>18</sup>

Finally, the positions of the republics on arms control have been quite different. Ukraine from the very beginning agreed to eliminate its 130 older SS-19 missiles under START provisions. The remaining 46 newer silo-based SS-24 ICBMs were to be eliminated by the end of 1994 (according to Kiev's commitments in the Alma-Ata and Minsk agreements), regardless of either START I or follow-on reductions. After several conflicting declarations, this was reconfirmed by President Kravchuk during his visit to the United States in May 1992. In Lisbon, however, the elimination of these missiles was linked to the seven-year START implementation period. The June 1992 Washington agreement had included promises to eliminate all MIRVed ICBMs, including those deployed in Ukraine, but Kiev declined to be bound by it.

Belarus, according to the same two initial CIS agreements, committed itself to the elimination of its 54 new road-mobile SS-25 missiles, but without specifying an elimination date or a link to START I or a follow-on treaty. In Lisbon, Belarus promised to allow the withdrawal of missiles to Russia within the START framework, although this was not actually required by the terms of either START or the new agreement.

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17. "Interview With President Kravchuk," *Izvestia*, 3 February 1992.

18. *Ibid.*



Kazakhstan initially refused to eliminate the 104 heavy SS-18 ICBMs on its soil (so long as Russia retained nuclear weapons), refraining from making a commitment to denuclearize under the CIS agreements. In May 1992 President Nursultan Nazarbayev reversed his position and promised (later reaffirming this pledge during his visit to the United States) to eliminate all the missiles within the START I context over the seven-year implementation period (i.e., around the year 2000). This was further confirmed by the Lisbon Protocol. Nazarbayev also suggested that Alma-Ata would not object if the missiles on its territory, for the meantime, remained under overt Russian control. Elimination of the missiles in Kazakhstan was not required by either START I or the first phase of START II (which allowed retention of 65 of the 104 SS-18s), but will eventually be called for during the second stage of START II.

In May 1992 Kazakhstan signed a collective security treaty with Russia and four other republics, accepting Russian security guarantees and its "nuclear umbrella," although formally Russia did not have nuclear weapons at its disposal, since by the initial agreements such weapons belonged to the unified CIS authorities. Neither Ukraine nor Belarus joined that collective security system. On November 4, 1992, the Supreme Soviet of the Russian Federation ratified the START I Treaty. At the same time, in a resolution adopted by the Supreme Soviet in connection with the ratification, the conditions for its entry into force and its implementation were described: the instruments of ratification are to be exchanged only after Belarus, Kazakhstan, and Ukraine have adhered to the NPT and after an accord has been signed between these three republics and Russia on the order of implementation of the treaty.

On February 4, 1993, the Supreme Soviet of Belarus decided to ratify and adhere to START I, the Lisbon Protocol, and the NPT (as a non-nuclear state). On February 10 the chairman of the Supreme Soviet, Stanislav Shushkevich, stated that "the seven-year period established for the withdrawal of nuclear forces from the republic was a maximum period and we shall try to shorten it by two and a half years."<sup>19</sup> Inasmuch as the nuclear forces deployed on the territory of the republic are under Russian jurisdiction, the problem of nuclear disarmament for Belarus is merely to transfer these forces to the territory of Russia.

According to START I data, 54 mobile single-warhead SS-25 ICBMs were deployed on Belarussian territory in 1991, but apparently this number was increased in 1993 to a total of 81 launchers.<sup>20</sup> According to a Russian-Belarussian agreement, these missiles will be redeployed to Russia. It should be mentioned, however, that neither the START I nor START II treaty calls for the elimination of this type of ICBM. Belarus has stated that it will leave the operational command and control of the nuclear forces on its territory in the hands of the Supreme Command of the United Armed Forces of the CIS until their complete withdrawal from its territory. Bilateral accords have been concluded between the two countries on the technical maintenance of the missiles, joint inspections, etc.<sup>21</sup>

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19. *Nezavisimaya Gazeta*, 11 February 1993.

20. *The Military Balance*, 93.

21. *Nezavisimaya Gazeta*, 27 February 1993.

Kazakhstan has also ratified the START I Treaty and the Lisbon Protocol. These accords will apply to the 104 heavy MIRVed silo-based SS-18 ICBMs deployed in Kazakhstan (with a total of 1040 warheads). With regard to the command and control of the strategic nuclear forces located on its territory, Kazakhstan's position resembles that of Belarus. Yet there is evidence that Kazakhstan's leadership and military command may keep all missile maintenance personnel under much closer control than Belarus.

In Ukraine the situation is much different. The most serious disagreements between the Russian Federation and Ukraine concern the status of the nuclear weapons deployed in Ukraine and the pace and order of their elimination, particularly the 176 SS-19 ICBMs of the 43rd Missile Army, carrying 1,240 nuclear warheads, deployed in silos near Khmelnitski and Pervomaysk (two missile divisions) and the 36 heavy bombers of the 46th Air Army, equipped with nuclear bombs and missiles (about 500 units) based in Priluki (Chernigov region) and Uzin (Kiev region).

The elaborate command and control system over ICBM forces was historically designed to prevent the possibility of an unauthorized missile launch. In particular, operational control was highly centralized (and linked exclusively to the central strategic command posts in Moscow area). Without the coded messages necessary to unlock the electronic locking devices (*kodo-blokiryushie ustroistva*), neither the crews at the regimental launch control bunkers nor the crews at the divisional or army command posts have the ability to launch missiles. Any manipulation of local control devices is automatically reported up the chain of command to the Moscow center, which has the technical ability to override such attempts. After the center transfers orders for a special remote operational regime, ICBMs may be launched directly from Moscow command posts, bypassing local personnel.

The system, however, was never designed to deal with the possibility of an attempt to "nationalize" the missiles. In peacetime local personnel can choose to obey or disregard the orders from the center to launch missiles or transfer them to the remote operating regime. Local personnel can also sever communication lines, placing themselves out of centralized control. (This does not, however, provide the units with their own launch capability). The troops serving and guarding the ICBM sites can also render their missiles inoperable if threatened by hostile forces.

Thus, the possibility of the strategic forces personnel changing loyalty and voluntarily accepting republican authority is an important issue. Another concern is the technical and economic ability of a republic to resubordinate operational control of its missiles after severing Moscow's control lines. These two concerns, for obvious reasons, leave Ukraine as the only likely republic with the potential to gain full control of the missiles on its territory. The danger of ICBMs being used as instruments of force between Russia and Kazakhstan or even becoming a subject of political conflict, however, is serious enough to warrant concern about non-Ukrainian contingencies.

Experts disagree over the extent of Ukraine's ability to incorporate the ICBMs into its national command. Still, it is plausible that Ukraine is the only state capable, with the cooperation of the service and maintenance troops, to place the missiles under its operational control. Such an effort, however, would necessarily require substantial

investments, technical programs, and a time lapse of at least several months. In particular it would entail:

- Changing all the software and, possibly, parts of the hardware of the ICBMs, their launch control bunkers, and divisional command centers;
- Building and equipping national command centers and cable and radio-communication links to missile sites, and providing codes to ensure positive and negative control;
- Rearranging all the maintenance and support infrastructure, and supplementing its major elements presently located in other republics or supplied by them;
- Solving the problem of the extremely volatile and toxic liquid fuel (*geptil*) of the SS-19, which must be refined regularly at special facilities in order to remain serviceable, or stored and eventually reprocessed if the missiles are eliminated;
- Creating facilities for checking and serving nuclear warheads;
- Developing new targeting lists, plans, and computer flight programs for the missiles;
- Providing air-defenses for the ICBM sites, which would be highly vulnerable even to conventional air strikes, with extremely short warning times available (a missile attack warning system would be completely unavailable); and
- Expanding the training and simulation facilities, including colleges for officers and technicians.

All of the above and additional requirements would be needed for the maintenance of the 176 missiles presently deployed just for the next decade or so. One example of a particular technical problem is that Ukrainian electronic locks, without which positive control over the missiles is impossible, must be compatible with the ICBM guidance systems. Ukraine has been producing guidance systems for the SS-19 missiles (and SS-18, deployed elsewhere), but they cannot be maintained properly by Ukraine, since the missiles themselves were manufactured in Russia. Furthermore, the SS-19 missiles are due to be withdrawn from service because of obsolescence during the 1990s.

The SS-24 missiles (which Ukraine was producing and can maintain) have guidance systems that were designed and manufactured in Russia. These systems can be made compatible with the addition of new electronic locks manufactured by Ukrainian construction bureaus. Yet if additional flight testing is required, Ukraine would not be able to test them within its own territory since the test launch pads and equipment for these ICBMs are located at the Plesetsk test range in Russia.

The situation with heavy bombers and their weapons is somewhat different. They have never represented a threat of unauthorized use comparable to missiles, and their command-control system is quite different. Bomber weapons were supplied with electronic locks as well, but these are easier to circumvent than those on missiles. Besides, Ukrainian personnel have independent access to the weapons, which are stored at airfield depots. On the other hand, Tu-160 and Tu-95 aircraft require complicated and expensive

maintenance work and have most probably degraded beyond their safety requirements since 1991. Ukrainian tactical strike aircraft are incapable of carrying ALCMs.

Despite the significant obstacles, a strongly motivated Ukraine would probably be capable, albeit with substantial sacrifices, of resubordinating and supporting at least some of its ICBMs for a number of years. It has sufficient economic resources, part of the SOF production and maintenance infrastructure, the technical and military cadres, as well as the electronics and programming centers. One of the available options might be to modify the ICBM nuclear warheads for employment as gravity bombs deliverable by aircraft. But in any case, Ukraine's potential SOF would remain unstable and vulnerable for many years, and consequently would represent a highly provocative strategic target.

It should be noted that leading political figures in Ukraine have repeatedly stated that it is the aim of the republic to become a non-nuclear state, to ratify the START I Treaty, and to adhere to the Non-proliferation Treaty. In February and March of 1993 committees of the Supreme Soviet of Ukraine started to examine the package of documents related to the ratification of START I (having already reneged on the promise to ratify the treaty by the end of 1992). Ratification was quickly linked to numerous conditions and provisos: special security guarantees to Ukraine on the part of the nuclear powers, financial compensation for the nuclear materials contained in the warheads, and compensation for the financial outlays required for the elimination of SOF (\$2.8 billion to \$3 billion, according to Ukrainian official assessments).<sup>22</sup> These conditions are not unreasonable and a possible agreement may still be reached.

Other demands, however, conflicted with the articles of the Lisbon Protocol and the officially stated aim of acquiring non-nuclear status. In statements by the Ukrainian National Assembly, Ukraine proposed to retain a portion of the nuclear potential deployed in Ukraine for an unspecified period.<sup>23</sup> The Ukrainian authorities declared that the nuclear weapons were, in fact, Ukrainian property. A center for the administrative control of the strategic nuclear forces of the Ministry of Defense of Ukraine has been established within the headquarters of the Ukrainian Armed Forces (A-1072, Kiev).<sup>24</sup> The Ukrainian Ministry of Defense's "administrative control" over the personnel of the two missile divisions (operational control actually remains with the Russian Ministry of Defense), together with the ban on the redeployment or elimination of the missiles, their components, and supporting equipment without authorization from the Ukrainian Ministry of Defense, may be interpreted as a departure from the Lisbon Protocol and Ukraine's obligations under the NPT.

The political contradictions and the disagreements regarding financial and technical policies between Russia and Ukraine have already resulted in a number of violations

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22. The official position of Kiev is that a formal multilateral treaty to guarantee Ukrainian security (against nuclear or conventional threats, economic pressure, or territorial claims) would be preferable to unilateral declarations of nuclear powers. Besides, a mechanism of providing these guarantees has to be clearly formulated. See V. Skachko, "Will Ukraine Be a Non-Nuclear State?" *Nezavisimaya Gazeta*, 29 May 1993, 1.

23. *Megapolis-Express*, 23 February 1993, 22.

24. *Sevodnya*, 23 February 1993.

of the regulations governing the maintenance of missiles and nuclear warheads, and consequently have lowered the safety level of the nuclear arsenal. Problems have also emerged in connection with the guarding and maintenance of the nuclear weapon storage sites for the bombers at the air bases in Priluki and Uzin. A special statement issued by the Russian Ministry of Foreign Affairs has also expressed concern that Ukraine did not fulfill its obligation by stating its position on the levels and timetable for the elimination of the SOF located on its territory.<sup>25</sup>

It should be emphasized, however, that Russia bears greater responsibility for the mistrust and lack of cooperation between the two republics. Numerous irresponsible declarations and resolutions by the Russian parliament, statements of many politicians with regard to the Crimea and the city of Sevastopol,<sup>26</sup> controversies over the Black Sea Fleet, the lack of political control over the actions and statements of the Russian military, Moscow's manipulation of the natural gas supply, and other economic ties with Kiev have all given Ukraine a serious basis for concern about its national security. The most radical Ukrainian politicians, on the other hand, argue merely for the need for Ukraine to acquire temporary "nuclear power status."

A special case in this relationship has been the Russian mismanagement of the institution of the United Armed Forces and Combined Strategic Forces Command, which had been designed to preserve centralized control over the nuclear arsenal and sustain the coordinated policy of the CIS states on all matters related to them. After the creation of the Russian Armed Forces and the Ministry of Defense in the spring of 1992, a rivalry emerged between the Russian and CIS military leaders and institutions. After the retirement of the commander of the Combined Strategic Forces Command, General Maximov, later that year, the post was left vacant. At the same time, the United Armed Forces institutions under Marshall Yevgeny Shaposhnikov were quickly deprived of any real authority or forces, as such authority had been shifted to the Russian Ministry of Defense within a year. Shaposhnikov was finally removed from his post in June 1993 and appointed to the Russian Security Council, making the United Armed Forces of the CIS, at best, an institution for interrepublic military consultations.

As a result, the other republics correctly perceived the CIS military institutions as a disguise for Russian control over the armed forces (including the SOF) outside Russian territory. While Belarus and Kazakhstan (with some reservations) accepted this reality, Ukraine did not, thereby creating a wide range of political, legal, and technical disputes over the strategic weapons deployed on its territory.

Due to political disagreements, the concept of the United Armed Forces and Unified Strategic Forces of the CIS has been ineffective, and the only correct solution seems to be to resolve these problems on the basis of equal trade-offs between Russia and Ukraine. Russian concessions in dividing the conventional forces (particularly the Black Sea Fleet), firm commitments to respect the sovereignty and territorial integrity of Ukraine, and flexibility on other issues might be exchanged successfully for Kiev's agreement to

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25. *Izvestia*, 27 February 1993.

26. See "Ukraine Demand Over Sevastopol," *Financial Times*, 15 July 1993, 2.

recognize temporary Russian control over the strategic forces until they are eliminated or redeployed. Instead, actual Russian policy has been quite different, provoking an uncooperative Ukrainian reaction over the issue of nuclear arms, which in turn has become an explosive issue in relations between the two states, in the START II Treaty process, and for global nuclear non-proliferation.

Another point of discord is Moscow's reluctance to coordinate with the other republics on its arms control policy. While the START II Treaty concluded between Russia and the United States does not require Belarus, Kazakhstan, and Ukraine to take any additional disarmament measures, it was not in keeping with the Minsk and Alma-Ata CIS agreements for Russia to proceed without consulting its neighbors. These unilateral Russian measures are regrettable despite the formal arguments put forward to justify this policy, and will likely complicate the search for a solution to the great number of outstanding problems regarding CIS strategic forces.

In view of the considerable instability in the domestic political situation in both Ukraine and Russia, it is becoming increasingly urgent for the political leaders of both states to settle the nuclear issue by making mutual concessions and taking into account each other's interests. Some progress was made during the January 1993 meeting between the presidents of Ukraine and Russia in Moscow. The president of Russia stated his readiness to give security guarantees to Ukraine. In return, the president of Ukraine confirmed Ukraine's intention to ratify the Lisbon Protocol and become a non-nuclear state. The sides agreed to define "a system providing for the material-technical servicing by the manufacturers and designers for the maintenance of the missile bases of the strategic nuclear forces."

In mid-August 1993 Russia and Ukraine concluded yet another technical agreement to cooperate in the dismantlement of strategic missiles, withdrawal of nuclear warheads, and utilization of nuclear material. Russia also agreed to compensate Ukraine with reactor-grade uranium for missiles withdrawn from its territory. Although the agreement was confirmed in September at a meeting of the two heads of state in Crimea, announcement of its details immediately triggered significant political opposition in Ukraine.

Cooperation on these questions is extremely important for the preservation of the centralized command and control of the strategic forces, for the prevention of their unauthorized use, and for their safe storage and orderly elimination under START I and START II.

Nevertheless, even if START I and the accompanying documents are ratified by all the republics, difficulties may arise inasmuch as the two treaties provide different schedules for the reduction of armaments, and a large number of organizational, financial, and technical questions will have to be resolved. Even if things go smoothly, the elimination schedule for nuclear weapons outside Russia seems excessively drawn out. A seven-year schedule is too long if one considers the existing instability within and between the CIS states. The status, the control, and the elimination of nuclear weapons can, in themselves, become sources of contention within the CIS and the object of political intrigue and provocation by nationalistic elements.

The optimal solution would be to agree on a package of political and arms control treaties to supplement START I, START II, and the Lisbon Protocol, with the full participation of the United States and the four former Soviet republics. The five nuclear powers should together sign a multilateral collective security treaty with Ukraine (and possibly with Kazakhstan and Belarus as well), committing themselves to guarantee the sovereignty and territorial integrity of Ukraine (and the others) and to respond to any unprovoked nuclear or conventional aggression against it. This would satisfy the official Ukrainian requests.

The Russian government, for its own part should take a much stronger position against the provocative activities and declarations of the nationalists in parliament and various public organizations. Russian claims to the Crimea or Sevastopol should be disavowed. The Black Sea Fleet should be divided equally between the two republics (particularly since it is not strategically important to either country, and neither country is able to maintain much more than half of it, anyway).

It should be possible to reach an additional arms control agreement on a speedier and less costly withdrawal of missiles from operational service by removing their warheads. These warheads should be centrally stored, with adequate control measures and guarantees for all the interested parties. Bomber weapons should be relocated from airfields to central storage sites. Adequate verification and monitoring systems should also be established. These measures should apply equally to the United States, Russia, Ukraine, and Kazakhstan. The smaller republics should be parties to the negotiations in order to prevent the problems created by their absence from the START II talks. The particulars of such a supplemental agreement include several options that should each be considered according to their respective benefits and disadvantages.





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## Downloading to Zero: Options and Trade-offs

In June 1993 the US proposal to Russia and Ukraine to remove the warheads from the 176 missiles on Ukrainian territory and store them in that country under joint control was rejected by Russia, which claimed that some important elements were absent.<sup>27</sup> First, in order to avoid discrimination with respect to the other republics (Ukrainian nuclear disarmament is linked with the disarmament of other countries), and to make this option acceptable to Russia, it should be framed in much broader terms and apply on a reciprocal basis to a large part of the MIRVed ICBMs and some SLBMs in Russia and the United States. Second, the delicate problem of control over the warheads in storage should be treated differently.

Three principal options might be subjects for talks between Russia and the United States, to be joined by Ukraine, Kazakhstan and Belarus in a new Lisbon-type protocol. The easiest option would be to remove and store separately all ICBM and SLBM warheads scheduled to be eliminated under the START I Treaty within the period of one year. This would mean reducing the implementation period of the Lisbon Protocol from seven years to one year. Since both the United States and Russia have already taken unilateral steps to reduce portions of their forces and have curtailed some of their modernization programs, this option would probably be favorable to the military establishments of both countries. It may, however, create problems with Ukraine (and potentially with Kazakhstan).

Ukraine has yet to ratify START I and the Lisbon Protocol in their original forms. Kiev's reservations, concerns, and objections to these agreements would apply even more strongly to a new US-Russian deal that incorporates the same obligations into a shorter implementation period. Besides, authorities in Kiev quite correctly point out that START I did not originally call for the elimination of the new SS-24 missiles and portions of the SS-19 missiles (the same argument applies to several dozen newly-modified SS-18 ICBMs in Kazakhstan). Consequently, the one-year supplemental protocol option may not garner the support it needs from all parties involved.

A second option might be to agree in the same way to remove the missile warheads earmarked for elimination during the first phase of START II within one or two years (this would include all but 2,160 SLBM warheads and 1,200 MIRVed ICBM warheads including only 650 heavy ICBM warheads). For the former Soviet forces this would mean removing warheads from all but 300 single-warhead missiles, 65 SS-18 missiles, 46 SS-24 ICBMs (deployed in Russia), 15 SS-19 MIRVed ICBMs and 105 downloaded SS-19 missiles, for a total of about 5,050 warheads (counting those on missiles that have been unilaterally withdrawn since 1991). If the principle of downloading to zero were applied to sea-based missiles as well, it might be slightly more difficult to comply with the SLBM warhead ceiling.

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27. J. Smith, "Russia Rebuffs US Plan on A-Arms," *Washington Post*, 7 June 1993, A16.

For the United States, this option would be easier. Complying with a 1,200 subceiling would require downloading only 244 of 500 Minuteman-III ICBMs from three warheads to one warhead, and would permit the United States to retain 256 Minuteman-III and all 50 Peacekeeper ICBMs unchanged. Complying with the SLBM subceiling would not be more difficult. Accelerated downloading of all Trident-I and Trident-II missiles from eight warheads to four warheads would leave the United States with 2,112 warheads on 12 Lafayette- and 14 Ohio-class submarines. Only the retirement of 12 boats with Poseidon missiles would be required, and all of them have already been removed from operational service since 1991. Since 6 old SSBNs with Trident-I missiles (768 warheads) have also been withdrawn from service already, the United States could simply download the missiles on the remaining 14 Ohio- and 6 Lafayette-class boats on a smaller scale.

The terms of this option would be harsher on Russia than on the United States. It would certainly be opposed by the Russian military and would meet with strong resistance from the START II opponents in parliament. Furthermore, it might not be very effective in dealing with the missiles in Ukraine. Kiev was not involved in the START II negotiations and does not feel bound by its terms (the Russian leadership's mistake in omitting Ukraine from the negotiation process was discussed above). In any case, since 1,200 warheads may be retained during START II's first phase, Ukraine might claim a portion of this allowance (perhaps 460 warheads on the new SS-24 missiles). Kazakhstan might do the same with regard to the 650 heavy missile allowance.

The third option is more significant in its deactivation of a large part of the strategic forces and its reduction of their alert status, but at the same time is more equitable in the terms applied to Russia and the United States. Furthermore, this option might "saturate" Russian domestic opposition and Ukrainian reservations with its ambitious goal of downloading missiles to zero and reducing and restructuring nuclear forces. It would be politically difficult for the former Soviet republics to oppose a major new arms reduction endeavor that involved them in the negotiations, provided them with political security guarantees and financial reimbursement, and affected the great powers more significantly than themselves. Since it would be closely tied to the previous treaties, this option (through its magnitude, special application criteria, and dismantlement and verification procedures) would actually constitute a new treaty in its own right.

Specifically, this option may envisage the complete removal within two to three years of all ICBM nuclear warheads earmarked for elimination under the first and second phases of START II and the withdrawal of some SLBMs along with older SSBNs. (See Table 4.) In Russia about 3,240 warheads would be removed and stored from MIRVed and old single-warhead ICBMs, together with 320 SLBMs (currently deployed on 25 Yankee and Delta-I submarines). An exception might be made for the SS-24 mobile MIRVed ICBMs. These could remain until the sufficient deployment of new single-warhead ICBMs. Altogether, Russia would remove a total of 3,670 warheads and retain only 870 warheads on ICBMs and 2,380 warheads on SLBMs for a total of 3,250 warheads by 1995-1996.

The United States, on the other hand, would remove 1,950 ICBM warheads (including those from the Peacekeeper, which is not mobile) and would retain 500 downloaded Minuteman-III missiles. It would also remove missiles with about 3,460 warheads from the 24 older Lafayette-class SSBNs (of which 18 have already been withdrawn) and

**Table 4: Downloading to zero within the START II framework (1995-96)**

|                        | System           | Delivery vehicles<br>(# of warheads each) | Warheads     | Warheads/<br>Bomber<br>Weapons<br>Removed | SSBNs<br>(# of SLBMs each) |
|------------------------|------------------|---|--------------|---|----------------------------|
| <b>RUSSIA</b>          |                  |   |              |   |                            |
| <b>ICBMs</b>           | SS-17            | 47 (0)                                    | 0            | 188                                       |                            |
|                        | SS-18            | 204 (0)                                   | 0            | 2,040                                     |                            |
|                        | SS-19            | 105 (1)                                   | 105          | 525                                       |                            |
|                        | SS-19            | 65 (0)                                    | 0            | 390                                       |                            |
|                        | SS-24 (silo)     | 10 (0)                                    | 0            | 100                                       |                            |
|                        | SS-24 (mobile)   | 36 (10)                                   | 360          | 0   |                            |
|                        | SS-25 (mobile)   | 405 (1)                                   | 405          | 0   |                            |
|                        | <i>Subtotal:</i> |   | <b>872</b>   | <b>870</b>                                | <b>3,243</b>               |
| <b>SLBMs</b>           | SS-N-6           | 0   | 0            | 96  | Y-I 6 (0)                  |
|                        | SS-N-17          | 0   | 0            | 12  | Y-II 1 (0)                 |
|                        | SS-N-8           | 0   | 0            | 216                                       | D-I 18 (0)                 |
|                        | SS-N-8           | 64 (1)                                    | 64           | 0   | D-II 4 (16)                |
|                        | SS-N-18          | 224 (3)                                   | 672          | 0   | D-III 14 (16)              |
|                        | SS-N-23          | 112 (4)                                   | 448          | 0   | D-IV 7 (16)                |
|                        | SS-N-20          | 120 (10)                                  | 1200         | 0   | Typhoon 6 (20)             |
|                        | <i>Subtotal:</i> |   | <b>520</b>   | <b>2384</b>                               | <b>324</b>                 |
| <b>Bombers</b>         | Tu-95MS16        | 22 (0)                                    | 0            | n/a                                       |                            |
|                        | Tu-95K           | 15 (0)                                    | 0            | n/a                                       |                            |
|                        | Tu-160           | 10 (0)                                    | 0            | n/a                                       |                            |
|                        | <i>Subtotal:</i> |   | <b>47</b>    | <b>[0]</b>                                | <b>[472]</b>               |
| <i>Total Russia:</i>   |                  | <b>1,439</b>                              | <b>3,254</b> | <b>3,567*</b>                             | <b>56</b>                  |
| <b>UKRAINE</b>         |                  |   |              |   |                            |
| <b>ICBMs</b>           | SS-19            | 130 (0)                                   | 0            | 780                                       |                            |
|                        | SS-24 (silo)     | 46 (0)                                    | 0            | 460                                       |                            |
|                        | <i>Subtotal:</i> | <b>176</b>                                | <b>0</b>     | <b>1,240</b>                              |                            |
| <b>Bombers</b>         | Tu-160           | 13 (0)                                    | 0            | n/a                                       |                            |
|                        | Tu-95MS16        | 21 (0)                                    | 0            | n/a                                       |                            |
|                        | <i>Subtotal:</i> | <b>34</b>                                 | <b>[0]</b>   | <b>[492]</b>                              |                            |
| <b>KAZAKHSTAN</b>      |                  |   |              |   |                            |
| <b>ICBMs</b>           | SS-18            | 104 (0)                                   | 0            | 1,040                                     |                            |
|                        | <i>Subtotal:</i> | <b>104</b>                                | <b>0</b>     | <b>1,040</b>                              |                            |
| <b>Bombers</b>         | Tu-95MS16        | 13 (0)                                    | 0            | n/a                                       |                            |
|                        | Tu-95MS6         | 27 (0)                                    | 0            | n/a                                       |                            |
|                        | <i>Subtotal:</i> | <b>40</b>                                 | <b>[0]</b>   | <b>[370]</b>                              |                            |
| <b>BELARUS</b>         |                  |   |              |   |                            |
| <b>ICBMs</b>           | SS-25            | 81 (1)                                    | 81           | 0   |                            |
|                        | <i>Subtotal:</i> | <b>81</b>                                 | <b>81</b>    | <b>0</b>                                  |                            |
| <i>Grandtotal CIS:</i> |                  | <b>1,874</b>                              | <b>3,335</b> | <b>5,847*</b>                             | <b>56</b>                  |

Table 4: Downloading to zero within the START II framework (1995-95)(cont.)

|                       | System        | Delivery vehicles<br>(# of warheads each) | Warheads      | Warheads/<br>Bomber<br>Weapons<br>Removed | SSBNs<br>(# of SLBMs each) |
|-----------------------|---------------|---|---------------|---|----------------------------|
| <b>UNITED STATES</b>  |               |   |               |   |                            |
| <b>ICBMs</b>          | MX            | 50 (0)                                    | 0             | 500                                       |                            |
|                       | Minuteman-III | 500 (1)                                   | 500           | 1,000                                     |                            |
|                       | Minuteman-II  | 450 (0)                                   | 0             | 450                                       |                            |
| <i>Subtotal:</i>      |               | <b>550</b>                                | <b>500</b>    | <b>1,950</b>                              |                            |
| <b>SLBMs</b>          | Poseidon      | 0   | 0             | 1,920                                     | 12 (0)                     |
|                       | Trident-I     | 0   | 0             | 1,536                                     | 12 (0)                     |
|                       | Trident-I     | 192 (8)                                   | 1,536         | 0   | 8 (24)                     |
|                       | Trident-II    | 120 (8)                                   | 960           | 0   | 5 (24)                     |
|                       | Trident-II    | 72 (4)                                    | 288           | 0   | 3 (24)                     |
| <i>Subtotal:</i>      |               | <b>384</b>                                | <b>2,784</b>  | <b>3,456</b>                              | <b>28</b>                  |
| <b>Bombers</b>        | B-52H         | 24 (20)                                   | 480           | n/a                                       |                            |
|                       | B-52H         | 70 (0)                                    | 0             | n/a                                       |                            |
|                       | B-52G         | 39 (0)                                    | 0             | n/a                                       |                            |
|                       | B-1B          | 96 (0)                                    | 0             | n/a                                       |                            |
| <i>Subtotal:</i>      |               | <b>229</b>                                | <b>[480]</b>  | <b>[3,404]</b>                            |                            |
| <i>Grandtotal US:</i> |               | <b>1,163</b>                              | <b>3,284*</b> | <b>5,406*</b>                             | <b>28</b>                  |

Notes: Total figures marked with an asterisk (e.g. 5406\*) include only warheads, not bomber weapons, which are set aside in brackets (e.g. [480]).

decommission the submarines. Total US warhead reductions through the downloading-to-zero process would amount to 5,400 warheads. With the 16th Ohio-class submarine due in service by the mid-1990s, this would leave the United States with 2,790 warheads on SLBMs, 500 on ICBMs and a total of 3,280 warheads in the missile force.

Simultaneously, all MIRVed ICBMs in Ukraine and Kazakhstan would be downloaded to zero and deactivated, with 2,280 warheads removed to central storage sites. Together with the warheads removed from Russian missiles this would amount to about 5,850 warheads, slightly more than the US total. Eighty-one single-warhead missiles in Belarus would remain in Belarus until being redeployed to Russia.

Also, as suggested above, all nuclear weapons carried by US heavy bombers (with the possible exception of some B-52H bombers) and former Soviet bombers would be stored at centralized storage sites.

This wide-ranging option has a number of advantages. About the same number of warheads would be removed and stored from former Soviet and US missile forces, and about the same number would be retained in the US and Russian forces. A slight US advantage in deployed bomber weapons (about 500 warheads) would compensate for the costs of storing the remainder. Deeper Russian ICBM warhead reductions would be alleviated by allowing it to retain mobile SS-24 missiles until the year 2003. Accelerated US decommissioning of the Lafayette-class SSBNs and centralized storing of most bomber weapons would round out the proposed reductions. In time, deployments of new ICBMs

and SLBMs and downloading of existing missiles would bring the force levels to START II ceilings unless deeper cuts are agreed upon at START III talks.

The potential disadvantages include the likely opposition of the military and some parliamentary factions in both countries to such a sweeping new agreement so soon after START II (a sufficiently radical and controversial treaty in Russia). It might be pointed out, however, that most of the missiles would be retained, and in the case of extraordinary situations, could even be reinstalled for use. Another potential disadvantage is the difficulty in obtaining a political agreement on sharing the additional economic costs of removing warheads and installing simulators. This option may be too politically controversial to sell to the bureaucracies and the public just yet.

The actual economic burdens of this plan presents another serious disadvantage. To begin with, there are the additional costs of maintaining large numbers of weapons and personnel to man decommissioned forces. Transporting and storing about 5,000 or 6,000 nuclear weapons and hundreds (thousands in the United States) of bomber weapons, in addition to the already-withdrawn tactical nuclear munitions, may turn out to be extremely costly. Russia would be unlikely to implement such a plan at all without more Western aid to help construct storage facilities and improve the transportation system. Dismantling nuclear warheads would alleviate the problem of storing and utilizing fissile material. Actually, the maximum dismantling capacity of Russian industry is only about 6,000 warheads, and this number might be removed in only one or two years. But then the tactical munitions would have to stay in storage sites longer (see Chapter 9), and manufacturing facilities would be unavailable for the purpose of assembling new warheads.

Since such a plan would make the downloading process irreversible, a new mutual verification mechanism, which is not easily compatible with one-way Western assistance, would also be needed. In particular, joint control over storage (an extremely delicate political matter) should be based on the principle of reciprocity and should take into account technical and security requirements.

Russian nuclear-technical troops of the 12th Main Directorate of the Ministry of Defense are the only personnel qualified to guard and service nuclear warheads in specialized storage sites in Russia and Ukraine. By agreement, the United States might establish permanent perimeter monitoring of storage sites and have the right to institute challenge inspections at storage sites at missile, submarine, and aircraft bases. Russia should also be eligible for reciprocal monitoring and inspection rights on US territory. Ukrainian control is unnecessary, since it is able to monitor and prohibit all transportation of warheads on its territory. Agreements on the removal of warheads for servicing and elimination at Russian manufacturing plants and on information exchange would be essential.

For all the complications and additional cost, the benefits to be derived from the downloading-to-zero options are substantial and manifold. For the United States and Russia it would mean the preservation of centralized control over the former Soviet nuclear arsenal and a more rapid reduction of the levels of the nuclear balance without incurring excessive expenditures through the accelerated dismantlement of weapons. Optimally, in two to three years nuclear levels could be reduced to 3,200–3,400 warheads

in the alert missile forces. The decision to rebuild up to START II ceilings or to negotiate a new treaty with lower force levels could be postponed.

Ukraine and Kazakhstan would obtain an acceptable form of negative control (i.e., the prevention of unauthorized Russian launches from their territory) over the ICBMs deployed on their territories by retaining the ability to prevent the loading of warheads onto missiles. At the same time, the question of republic administrative control over the strategic forces personnel would diminish in importance. They would acquire more tangible multilateral security guarantees and would also benefit from the use of uranium from the warheads for peaceful purposes (the precise conditions could be agreed on with the assistance of Moscow and Washington).

With regard to non-proliferation and global security, such an arrangement would avert the potentially catastrophic consequences of a possible disintegration of the Soviet nuclear legacy.

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## START II and the ABM Treaty

Over the course of the last two decades the ABM Treaty has been the only long-term agreement that has retained its full legal force, thereby signifying a continuity in the strategic arms reduction process between the two leading nuclear powers. During the 1980s this treaty was challenged by the US Strategic Defense Initiative (SDI) program, and it barely survived the official US permissive interpretations of its provisions that permitted space experiments in virtual contradiction to its stated terms. The Soviet construction of the Krasnoyarsk early-warning radar, a number of anti-ballistic, air-defense, and space programs, as well as the persistent modernization of the ABM complex around Moscow also threatened to destroy the fragile agreement.

The end of the Cold War, the disintegration of the Soviet Union, US defense budget cuts, and the strategic and technical problems of SDI largely reduced enthusiasm and support for large-scale strategic defense in the United States, thereby relieving the pressure on the ABM Treaty. In 1991-93, however, an extremely ambiguous attitude began to emerge in Russia with regard to the ABM Treaty. The president and a number of officials and experts began to advocate the deployment of a "global Russian-US defense system against ballistic missiles," while simultaneously advocating the preservation of the ABM Treaty.

In June 1992, at the US-Russian summit meeting, a memorandum was signed on the elaboration of the concept for a Global Defense System (GDS).<sup>28</sup> Until now, however, official statements by the leading Russian political figures have not shed further light on this concept. In particular, it is unclear whether the joint development of non-combat monitoring and early-warning systems or of operational ABM defense assets such as space- and ground-based interceptors is envisaged.

This ambiguity is caused by a number of factors. First, a certain euphoria caused by the changes in US-Russian relations has prompted ill-conceived attempts to bypass the customary stages in the development of such a relationship in order to enter into a military alliance. Such efforts, however, ignore certain significant strategic, geopolitical, and domestic realities.

Second, there has been a lack of understanding of the complex and contradictory dialectics of offensive and defensive systems from the point of view of strategic stability (and in some cases a dishonest and opportunistic attitude on the part of quite competent experts). Third, the interests of the anti-missile and space industry in Russia, fearing cuts in allocations for its programs and looking for new missions to replace "countering the US threat," have also played a big role.

The authors of this study submit that if a defense system is necessary to protect against the possible launch of ballistic missiles armed with weapons of mass destruction by Third World dictators, then such a system may, in fact, be beneficial and worthwhile.

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28. *Rossiiskaya Gazeta*, 18 June 1992.

In particular, such a system should incorporate improved mobile, tactical ABM defense technology designed to intercept operational- and tactical-range missiles of the "Scud" variety in regional theaters. Such a system (whether developed in a parallel or joint manner) does not violate the ABM Treaty, although it does require clarification of a number of its provisions. At this time, the joint development and use of a space-surveillance and early-warning system of missile launches would also be quite attractive for Russia.

On the other hand, a multilayered ABM defense system with space- and ground-based interceptors (even as a limited version of the 1991 Global Protection Against Limited Strikes proposal of the Bush administration) would not represent the best form of defense against Third World missile threats. Furthermore, such a system would not conform with the terms of the ABM Treaty and could actually be destabilizing as a result of the drastic START II cuts in US and Russian strategic forces. The misguided notions of the need for an ABM system to combat limited strikes is symptomatic of the general public misperceptions of the US-Russian strategic relationship.

In reality, START II can indeed deeply transform this strategic relationship. Its significance lies in the abandonment of the counterforce strategy, the constant high-alert rates of nuclear weapons, the monstrous plans for inflicting devastating damage, and the extensive rivalry in the building of ever-more-perfect weapons of mass destruction. This achievement can be enhanced even further by still more innovative agreements, some of which were suggested above. Attempts to inflate START II's importance, however, with excessively euphoric declarations and implications that this treaty imparts something it was not designed to deliver (for instance, that it will replace mutual deterrence with a military alliance, or that it will make nuclear weapons mere abstract symbols) do not contribute to realistic clarity in the relationship. Such over exaggeration inevitably leads to misunderstanding and disappointment, and exposes the treaty to unnecessary criticism and devaluates its real qualities.

The treaty does not remove, but will stabilize at lower levels, the balance of mutual capability for a limited but sufficient retaliatory response to a possible nuclear attack. This is the embodiment of the concept of strategic stability and is fully consonant with the logic of the ABM Treaty. Plans for parallel or "joint" ground- and space-based anti-missile systems (being only slightly modified versions of technical blueprints from the Cold War past) contradict this logic. The ill-considered strategic conceptions on the part of certain Russian politicians and scholars has also contributed to the ambiguity in Moscow's policy on anti-missile defense and the ABM Treaty.

It would seem that the link between START II and the maintenance of the ABM Treaty has not been clearly and unambiguously expressed in the START Preamble (although there has been an improvement in this regard from START I). The interdependence between deep cuts in offensive weapons and compliance with the ABM Treaty, as two inseparable aspects of strategic stability for the foreseeable future, should have been more clearly defined.

Such an articulation would not have put obstacles in the way of building joint ABM defense systems if the United States and Russia should come to such a decision in the future. If the ABM defense system is to be a joint undertaking, then, by definition, revision



of the ABM Treaty or amendments to it will be on agreed terms and in conformity with its articles and will not undermine START II.<sup>29</sup>

If one of the two powers decides to build a strategic ABM defense system unilaterally, the other power might see this as a threat to its vital interests and would feel free to denounce START II in order to take the necessary responsive measures, including a buildup of offensive strategic weapons. The value of linking START II with the ABM Treaty in a straightforward way would lie in its representing an additional political and legal guarantee for jointly agreed action in the strategic relationship in a spirit of cooperation and partnership.

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29. *Disarmament and Security: IMEMO 1980 Yearbook*, (Moscow: APN, 1987), 196-204.



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## Deep Cuts and Other Nuclear Powers

START II has shed new light on the role of the nuclear weapons of the other acknowledged nuclear powers: Great Britain, France, and the People's Republic of China. Unlike the two superpowers, which have conducted an intensive dialogue on the control of nuclear armaments over the last few decades, the other nuclear weapons states (NWS) have, so far, held back from nuclear arms reduction and limitation talks.

The position of these nuclear states on nuclear arms control has usually been explained by the enormous superiority of the nuclear arsenals of the United States and the former USSR. In the Cold War years, the quantitative and qualitative differences in the nuclear arsenals, as well as the clear bipolarity of military-political relations on a global and regional level, made it possible to address the nuclear balance from a bipolar angle.

On the other hand, multilateral agreements on nuclear weapons are not unprecedented: they include the Partial Test Ban and Non-proliferation treaties of 1963 and 1969. With France and China recently joining the NPT, all five nuclear weapons states are parties to this important arms control agreement. Similarly, in 1992 Britain and France joined the Russian and US reciprocal moratorium on nuclear tests. Britain has also followed the US and Russian lead in the reduction and partial elimination of tactical nuclear weapons since 1991.

Throughout the two decades of strategic arms control negotiations, the Soviet Union has been trying to extend the limitations to these other nuclear powers. The best known examples were the attempts by the Soviet Union to have the nuclear armaments of France and Great Britain included in the equation of nuclear forces at the SALT I talks in 1972 and in the theater nuclear balance in Europe at the negotiations on the intermediate and shorter-range missiles in the 1980s.

In keeping with the monumental political and military changes in the world after August 1991, the first radical treaty on strategic arms reduction, START II, was not conditioned by Moscow on limitations of other NWS. Nonetheless, this issue is destined to arise in the future, if only due to the changing strategic balance.

At present, the aggregate numbers of the other nuclear powers' long-range forces (if counted by missile warheads) total 690 units for Britain and France, and 770 warheads if China's forces are added.<sup>30</sup> This is less than 5 to 7 percent of the total number of warheads of the SOF of each of the two nuclear superpowers. In ten years time, however, if the nuclear modernization programs of the three smaller nuclear powers are implemented, the combined total for Britain and France may be anywhere from 768 warheads to 1,824 warheads. The Chinese, British, and French arsenals together may be in the range of 1,000 to 2,800 warheads. If START II reductions are implemented by the United

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30. *The Military Balance*, 227-37.

States and Russia, their proportion may grow anywhere from 35 percent to 80 percent of the forces of each of the big two.<sup>31</sup>

The simultaneous radical reduction of Russian and US strategic forces and buildup of other NWS forces suggest that at some future point limitation of the other countries' nuclear arsenals will become necessary for the enhancement of the US-Russian arms reduction and limitation regime. It is all the more relevant now that political, economic, and strategic reasons have appeared to reduce these levels much more quickly and have prompted deeper reductions over the next ten to fifteen years.

The long-range nuclear forces of the remaining four NWS are predominantly targeted against Russia, except for a small fraction of Chinese missiles that are probably directed at the United States and a similar portion of US weapons directed at China. Hence all four nuclear counterparts must be deterred by Russian nuclear forces, targeted to the north, west, and east.

The forces of the three smaller NWS at present lack effective counterforce capabilities. In the future, British and possibly French missiles will acquire some capabilities of this sort. Although Russian forces, according to START II guidelines, will be fundamentally restructured in favor of sea and mobile land-based missile systems, close to 300-400 ICBMs will be based in silos, presenting attractive targets to the other NWS. According to the estimates of Russian defense experts, in ten years the joint British and French hard-target counterforce capability will increase by 10 to 13 times and will constitute 20 percent of the US counterforce capability. China's hard-target kill potential may be multiplied by as much as 50 times over the next ten to fifteen years.<sup>32</sup>

Hence the Russian posture at follow-on talks might envisage further reductions of START II ceilings to numbers that would apply to the strategic forces of Russia, on the one hand, and to the aggregate total of the United States, British, and French forces, on the other hand. While this model would be highly advantageous to Russia, it would certainly appear flawed to the other parties, on both political and strategic grounds.

Another model of multilateral arms control, which establishes equality in some categories of systems between the two major states and apportions lower quotas to the smaller parties, could be called the quota option. This option may be preferred by the United States, and appears to be a second best solution for Russia. The quota option, however, may likely be unacceptable to the other NWS. Politically, it would be difficult for all three to agree on individual ceilings that are highly asymmetric with those of the United States and Russia. Unequal individual ceilings among themselves would probably be rejected as well. By necessity, the arbitrary nature of quotas for the other NWS provides grounds for endless disputes over concrete figures.

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31. See *Arms Control Reporter 1993*, (Cambridge: Institute for Defense and Disarmament Studies, 1993), 611,E08-611,E010.

32. See paper by Colonel V. Dvorkin, Commander, Central Institute of Armed Forces, Russian Strategic Rocket Forces, prepared for the IGCC conference on future French, Chinese, and British nuclear weapons policies, La Jolla, California, 2-3 June, 1993.

Finally, a third model may be termed the egalitarian model as it would set equal limits on the weapons of all five states. This is the option that is likely to be favored or is implied in the official policy of Britain, France, and China. It would very likely be rejected by both the United States and Russia.

For the United States, it would be politically unthinkable to cut its forces to the level of each of the three smaller NWS (be it 500 or 1,000 warheads) or to legally acknowledge their right to build up to the US level. Besides, this would eliminate the need for US nuclear commitments and leadership in NATO and its relationships with Japan and South Korea.

Although unattractive to the United States, however, this option would seem even more threatening to Russia. If Britain and France remain US allies, Russia would face Western forces three times superior to its own, re-creating the strategic balance of the late 1950s or early 1960s. Still worse, since China would also be considered a possible adversary, Moscow would face nuclear forces four times superior to its own, further supplemented by the medium range and tactical nuclear forces of the United States, Britain, France, and China.

Although all three models described above have conspicuous deficiencies and would be criticized by one or another nuclear weapon state, each of them has advantages of various sorts. These advantages should be utilized in possible future multilateral arms control arrangements.

The talks with Britain and France would start no earlier than the late 1990s, close to the beginning of the second phase of START II implementation (i.e., when all the weapons out of Russia are eliminated or withdrawn and the United States and Russia move below the level of 3,800-4,250 warheads). The implementation of limits on British and French forces would therefore be parallel with START III cuts in Russian and US forces. Negotiations and agreements may happen earlier if the big two agree on more radical or faster reductions than those envisaged by START II.

The form and format of participation by the other NWS, however, would not be as additional parties to START III. Indeed this might complicate things significantly because the principles of French and British limitations may be incompatible with accepted START guidelines ("parity at lower levels," "strategic stability," "removal of first strike incentives," "lowering of concentration of warheads on delivery vehicles," "downloading" parameters, "break-out capabilities," etc.) or START's implementation time frame.

Even beyond START II implementation and the modernization programs of the other NWS, Russian forces will remain superior to the aggregate total of British and French forces. Therefore, it may be expedient to begin by limiting only some of the weapon systems of the parties involved. This method, particularly applicable to highly asymmetric balances, was partially employed in SALT I, when only two components of the US and Soviet strategic triads were limited by the Interim Agreement of 1972. By the same logic, Russia on the one side and Britain and France on the other side might agree to limit the number of warheads on their SLBMs to 1,250 by 2005-2006. All other strategic and medium-range systems could be omitted from this initial treaty.

The same subceiling could be part of a separate US-Russian START III treaty, envisaging further strategic forces reductions, including a drawdown over ten years to 2,500 warheads by 2005-2006. Limiting the same weapons in two separate treaties with different sets of participants is not unprecedented: Soviet Tu-22 Backfire bombers were limited by both the START I and the Conventional Forces in Europe (CFE) treaties.<sup>33</sup>

From a strategic point of view, such a subceiling on SLBM warheads would probably be acceptable to both Russia and the United States. If START III envisages further reductions of the aggregate warhead level by 30 percent, then the START II SLBM subceiling of 1,700-1,750 may be lowered accordingly, using the same 50 percent ratio as a benchmark for the sea-based component of the triad.

This might also be seen as a good arrangement by the British and French. Their national programs currently plan for a future deployment of four Vanguard and four or five Le Triomphant-class ballistic missile submarines, respectively. The United Kingdom plans to equip each of its 64 Trident-II SLBMs with eight Mark-IV MIRV warheads (although full capacity is actually 12 warheads). This would provide Britain with 512 total warheads. For economic and political reasons, however, warheads for only three SSBNs may be produced (as one boat is expected to be in overhaul at any given time), or each missile could be downloaded to six or even four warheads. These scenarios would reduce the British total number of warheads to the 256-384 range. Eighty French M-5 missiles on five SSBNs will likely be equipped with eight warheads each (again, full capacity is 12 warheads) for a total of 640 warheads. Again, however, warheads may only be produced for the missiles of three of the submarines, leaving France with 384 total warheads.<sup>34</sup> The French may also choose to download the SLBMs to six warheads instead of eight warheads.

Thus, by accepting a collective ceiling of 1,250 SLBM warheads, France and Britain will not be restricting their modernization programs (which will optimally provide them with an aggregate level of 1,152 warheads) for the relevant time frame. At the same time, they will benefit from further strategic arms reductions by Russia and the United States, to much lower levels than those envisaged by START II.

Such an initiative would not discriminate against the French and British strategic forces, as they would be limited to levels equal with those of the Russian forces of the same type (which under START II and START III will become much more prominent in its strategic triad or diad, increasing from 30 percent to 50 percent of the total number of warheads). In a sense, from the British and French points of view this treaty would embody the egalitarian model. With regard to the superior Russian ICBM forces, unlimited by this arrangement, the European states would continue to rely on the US-Russian START III agreement. Formally, however, the two European powers would also be entitled to deploy an unlimited number of ICBMs and heavy bombers, though this would be unlikely for strategic, economic, and political reasons. Furthermore, if necessary, they could also enhance their nuclear deterrent with sub-strategic nuclear weapons.

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33. *Arms Control Reporter* 1992, 611,A12.

34. *Arms Control Reporter* 1993, 611,E09-611,E010.

The crucial factor in determining the feasibility of the initiative described above is the willingness of the United Kingdom and France to have their arsenals counted as one and limited by a collective ceiling. Such willingness will likely be determined by the progress of European defense integration and the seriousness of their desire to assume genuine arms control commitments.





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## Forward-based Nuclear Forces

President George Bush's September 1991 unilateral decision regarding tactical nuclear weapons and the responsive measures by Presidents Gorbachev and Yeltsin in 1991-92 initiated a large-scale parallel reduction of the massive arsenals of tactical nuclear weapons. Through unilateral measures, Washington and Moscow were able to address problems that would otherwise have taken years of negotiation to resolve.

There were a number of good reasons for doing so. First, following the disintegration of the Warsaw Treaty Organization, the reunification of Germany, and the withdrawal of Soviet armed forces from Central and Eastern Europe, certain types of tactical nuclear weapons (TNW), including nuclear artillery, tactical nuclear missiles, and nuclear land mines, were made obsolete by new strategic and operational realities. The likely targets for these weapons had moved out of range, and it became senseless to retain them in Europe.

Second, the signing of the Paris CFE Treaty in 1991 and the ensuing political events in Eastern Europe and the Soviet Union removed the probability of large-scale conventional offensive operations, making virtually obsolete the sacrosanct NATO principle of "the first use of nuclear weapons" to counter superior conventional forces of its Eastern opponents.

Finally, the disintegration of the Soviet Union raised the serious question of its control over its nuclear forces, including its tactical weapons. These weapons were much more numerous (about 15,000 units, including 10,000 in the European theater alone) and more widely dispersed across the former Soviet republics than the strategic forces of the former Soviet Union.<sup>35</sup> Also, by definition they did not have the elaborate centralized control systems of the SOF and, consequently, were more vulnerable to theft and unauthorized use. This was the primary motivating reason why the United States sought to bind the USSR (and later its successors) with obligations to provide for the safety and the elimination of tactical nuclear weapons that could otherwise fall into the wrong hands during the course of local wars or division of the Soviet armed forces.

President Bush's initiative on tactical nuclear weapons entailed the following:

- The transfer of all land-based nuclear weapons (nuclear artillery shells and warheads for the tactical Lance missile) to US territory for eventual dismantlement and elimination, including those deployed in Europe and South Korea;
- The removal of all tactical nuclear weapons (including nuclear Tomahawk SLCMs and depth charges) from surface ships, attack submarines, and land-based naval aviation, followed by the storage and subsequent destruction of about half of them; and

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35. "Interview with Marshall Akhromeev," *Pravda*, 19 April 1989.

- The halting of development of the TASM-T air-to-ground missile (a version of the SRAM-II missile) designed for tactical strike aircraft.

President Bush's proposals were later expanded by a decision of the NATO nuclear planning group at the 1991 meeting in Taormina, Italy, to include a reduction of almost half of the remaining forward based tactical nuclear weapons in Europe (from 1,400 to 700 nuclear gravity bombs). The greater part of these reductions was carried out by the United States, but Great Britain also cut the number of its W-177 A/B gravity bombs deployed in Germany by half (approximately 100 weapons). In addition, in support of the US initiative, the United Kingdom removed the W-177 air-dropped depth charges (about 25 weapons) from the aircraft and helicopters of its naval aviation forces, with plans for their subsequent destruction.<sup>36</sup>

Moscow immediately reacted to the US initiative in 1991 by promising similar reductions in its land- and sea-based tactical nuclear weapon forces. All such weapons of the ground forces, the navy, and air defense were to be transferred to production plant storage sites and centralized storage depots prior to their subsequent elimination. Later, Yeltsin officially stated that Russia would eliminate its entire stockpile of ground force nuclear weapons, a third of its naval tactical nuclear weapons, and half of its air defense nuclear warheads. Russia also decided to reduce by half the air force TNW stockpile. Simultaneously, a proposal was made to the United States for reciprocal cooperation in removing the remaining air force tactical nuclear weapons of both countries from operational service and transferring them to centralized storage sites.<sup>37</sup>

The United States removed all TNW from South Korea by October 18, 1991, and all nuclear artillery shells, Lance missile warheads, and depth charges from Europe by July 2, 1992. All the tactical nuclear arms had also been removed by this time from US surface ships and submarines.<sup>38</sup>

Russia, in turn, transferred all TNW from the former Soviet Union republics to its own territory. The CIS member states reached agreement on this in Alma-Ata and Minsk in December 1991. The withdrawal process from Ukraine was temporarily halted in early 1992, following the initial rise in Russian-Ukrainian political tensions. This provoked strong US pressure on Kiev, and the removal of TNW to airfield storage, production plant sites, and centralized depots in Russia was completed in May 1992, a month earlier than scheduled.<sup>39</sup>

For the first time in three decades, the US ground forces and Marine Corps are no longer equipped with tactical nuclear weapons. Such armaments are also no longer carried onboard US surface ships and submarines, rendering the principle "neither to confirm nor to deny" (i.e., the presence of TNW) meaningless. All the TNW earmarked for elimination are now on US territory. Nuclear weapons have been completely removed from South Korea, and their numbers in Europe have been reduced by 80 percent.

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36. *The Military Balance*, 33.

37. *Rossiiskaya Gazeta*, 30 January 1992.

38. ITAR-TASS, MEI, 3 July 1992, 1, 17.

39. *Izvestia*, 7 May 1992.

It has also been possible to avoid the dispersal of the former Soviet TNW among the republics. By CIS agreement, tactical nuclear weapons have been removed from the active units of the ground forces, air defense, and navy and transferred to the territory of the Russian Federation. Unfortunately, it remains unclear whether the naval TNW and air-delivered munitions were transported to centralized storage sites or whether they remained at their local unit sites. The lack of official and unofficial information (sometimes compounded by contradictory official statements) on such issues is a major deficiency of the new Russian government's policy-making process.

While the range of these disarmament measures is impressive, the participation of the United Kingdom, one of the lesser nuclear powers, in the US-Russian tactical nuclear disarmament process may be considered unprecedented. For the first time a large number of nuclear forces will be dismantled, not just stored, and their fissile material utilized. Also, a number of nuclear weapons classes are to be completely destroyed (nuclear artillery, tactical missile nuclear warheads, and nuclear demolition munitions).

The numbers of weapons to be eliminated are also impressive. The United States will eliminate at least 3,050 tactical nuclear munitions (1,300 artillery shells, 850 Lance missile warheads, and about 900 naval armament units, mostly depth charges).<sup>40</sup> And while assessing the scale of Russian reductions without official information is not easy, estimates indicate that Russia will have to eliminate about 9,200 to 9,450 tactical nuclear warheads (approximately 5,000 nuclear artillery shells, mortar projectiles, tactical missile warheads, and nuclear land mines; 1,250 anti-aircraft missile warheads; 1,200 nuclear depth charges, torpedoes, and naval missiles of various types; and 1,750-2,000 nuclear gravity bombs and air-launched missiles).<sup>41</sup>

Despite these successes, a lack of coordination similar to that in other policy areas is becoming apparent in Russia. Many problems are occurring due to a lack of storage, transportation, and dismantling capacities. Conflicting departmental interests and actions of the Office of the President, the Ministry of Foreign Affairs, the Ministry of Defense, and the Ministry of Atomic Energy have led to overfilled storage sites, problems with safety regulations, and unnecessary expenditures.

In spite of the unprecedented scale and value of these unilateral initiatives, the need for some formal bilateral agreements is evident, especially given the confusing situation in Russia. Such agreements should facilitate the exchange of comprehensive data on the transportation, storage, dismantlement, and utilization of TNW, should provide both sides (as well as the Russian legislature and public) with the ability to monitor the implementation of these commitments, and should make them more difficult to reverse.

Another possible benefit of formal agreements (even after the process has already been initiated by unilateral actions) is that they may create favorable conditions for

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40. *SIPRI Yearbook 1992: World Armaments and Disarmament*, (New York: Oxford University Press, 1993), 68.

41. "Nuclear Armaments and Republican Sovereignty," *Mezhdunarodnye Otnoshenia*, 1992, 53-4.

further reductions of tactical nuclear weapons. Currently, tactical nuclear weapons remain part of the armaments of both countries' aviation forces in the form of gravity bombs and short-range air-to-surface missiles (the latter deployed on heavy bombers and Russian medium-range bombers of the Tu-16, Tu-22, and Tu-22M types). The number of tactical nuclear munitions in the Russian Air Force after reductions will be about 1,750-2,000 bombs and missiles, and around 2,000 in the US Air Force, including 500-600 gravity bombs in Europe.

Such quantities of nuclear weapons in operational service seem excessive, especially if START II is ratified and enters the implementation phase. They could create an additional element of instability by posing a threat to strategic targets in the European part of Russian territory. On the other hand, it would be unrealistic to expect the complete elimination of TNW in the near future. For the United States, tactical nuclear weapons, together with the presence of the remaining US general-purpose forces in Europe, guarantee its continued political leadership in NATO. Moreover, tactical nuclear weapons serve as additional insurance for a number of possible contingencies that may occur as a result of increasing nuclear proliferation in the Third World, uncertain future developments in the former USSR, and the unpredictable consequences of German reunification.

It would seem, therefore, that Russia would also need to retain a limited number of TNW as security insurance against possible radical geopolitical shifts in Europe or Asia. This is particularly important, given the weakness of Russian conventional forces following the disintegration of the Soviet Union, the economic and financial crisis, and mismanagement of the military reform and conversion program.

The advantages in preserving a limited number of nuclear munitions delivered by aircraft (as opposed to other classes of TNW) lie in their safeguards against unauthorized use and their unsuitability for delivering a surprise strike (due to longer flight times and the need to penetrate air defenses). One of the potential problems, however, is the blurred distinction between aircraft TNW and strategic nuclear bombs for heavy bombers. US heavy bombers and the 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 also probably suited for delivery by strategic and tactical aircraft, and short-range air-to-surface missiles of the 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 START II counting rules define ALCMs and short range missiles and bombs as separate warheads within the aggregate ceilings. A large number of surplus nuclear bombs, retained for tactical strike aircraft, increases the possibility of a potential break-out by deploying them on heavy bombers converted for non-nuclear missions. Furthermore, a massive redeployment of strike aircraft and tactical nuclear bombs to forward bases could actually triple US Air Force warhead assets.

The above mentioned arguments provide good reason for Russia and the United States to supplement their unilateral decisions to put heavy bombers off alert with a formal agreement to store the weapons at central storage sites away from airfields. In this regard, the problem of tactical aviation gravity bombs may become an important and complicating issue. Storing nuclear bombs at tactical aircraft airfields (where heavy

bombers may be quickly redeployed) or basing strategic and tactical aviation elements together increases the likelihood of an easy and undetected circumvention of this agreement.

This problem could be resolved by an agreement to store most of the nuclear weapons of both strategic and tactical aircraft (including those remaining in Europe) at centralized depots. Following the provisions established by START II, the storage sites of these weapons should be located no closer than 100 kilometers to any air base. Since the US and Russian nuclear storage infrastructures are somewhat different, this would clearly be a subject for negotiations between the two sides.

It is extremely important 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 also be a provision for permanent perimeter monitoring of central storage sites or challenge inspections at airfield depots by each country, in addition to notification procedures on the numbers and types of stored weapons and their withdrawal, delivery, or relocation.



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## Conventional Counterforce Impact

The recent military operations in the Persian Gulf against Iraq are commonly perceived as having demonstrated the effectiveness of precision-guided non-nuclear weapons in destroying weapon sites, command-control and communication posts, and other hardened point targets. On this note, Russian experts naturally raise the question as to how much of a hypothetical threat such a capability might present to Russian mobile and silo-based strategic missiles and command-control and communication systems, especially after the START II reductions.

According to some Russian military forecasts, about 240 strategic bombers and 5,500 tactical strike aircraft are currently available to NATO worldwide. By the year 2000 these numbers may shift to 180 and 6,500 respectively, of which 25 percent of the heavy bombers and 5 to 7 percent of tactical aviation may realistically be allocated for conventional strikes against Russian strategic forces. Of the Russian fixed and mobile missile bases, 100 percent would be within range of converted heavy bombers and about 40 to 50 percent within range of tactical aircraft.

Heavy bombers of the B-52G and B-1B types may be equipped to deliver 8 to 22 AGM-137A missiles or 38 GBU-11 guided bombs in each sortie. Tactical aircraft of the F-15A, F-15C, F-15E, F-16, F-111, F-117, F-22, and Tornado types may carry variable loading of two to six AGM-65 Maverick and four AGM-130A or AGM-84E missiles and two to four GBU-8, GBU-10, GBU-11, and GBU-15 bombs. Estimates suggest that two to three weeks of intensive NATO conventional air strikes would be capable of destroying around 20 percent of fixed ICBM silos and 40 to 50 percent of railway and mobile ICBM launchers at this time.

By the year 2000, after most of the START II reductions and planned strategic force modernization programs have been implemented, NATO aircraft would be capable of destroying about 60 percent of the fixed and 15 percent of the mobile ICBM launchers. Just as important, by hitting bridges, roads, and fixed structures in mobile ICBM deployment areas, conventional strikes might significantly degrade their mobility, thus making them, along with the missiles in fixed silos, vulnerable to a nuclear counterforce attack. Even more damage could be inflicted by conventional strikes against command-control-communication systems.

The apparent assumption behind these calculations is that Russia would not respond to conventional air raids with strategic nuclear retaliation against the US homeland. It resembles the core problem of NATO strategy in the 1960s to 1980s: maintaining the credibility of nuclear retaliation to counter Soviet conventional attacks, including air strikes against NATO tactical nuclear weapon sites.

The Russian assumption is that such conventional attacks might grant certain advantages for NATO, compared to the option of a nuclear counterforce strike. In particular, conventional strikes do not inflict vast collateral damage, which is more likely to provoke an all-out nuclear retaliation. Strikes may be repeated continually in order to achieve high kill results, while a nuclear attack allows only one attempt. Conventional

attacks are also the most effective options against land mobile ICBMs, normally the forces least vulnerable to nuclear counterforce operations. Finally, conventional strike capability represents the area of greatest military asymmetry in favor of the United States, since Russia lacks virtually any such capability against the US strategic forces.

The combat operations in the Persian Gulf have undoubtedly influenced, and will continue to influence, the future development of military technology, procurement, and operational planning. At the same time, it would be wrong, in the view of the authors of this study, to mechanically transpose the experience of the war in Iraq to the US-Russian strategic balance for numerous reasons.

The military operations in the Gulf were preceded by a long period of preparation (more than six months) during which the United States alone concentrated 10 divisions, about 1,000 aircraft, and a powerful fleet of ships, submarines, and six aircraft carriers (a large number of which were armed with guided missiles) in the theater. During this time Iraq remained virtually inactive in the hope that the United States would not start a war but would limit itself to a mere show of force.

The multinational forces had overwhelming superiority in the air (in the most advanced aircraft a correlation of 13:1) and at sea (in combat ships 20:1) and absolute superiority in precision-guided weapon systems (land-attack Tomahawk SLCMs, guided gravity bombs and missiles, space-based and airborne intelligence and navigation assets, etc.). Beginning on January 17, 1991, the multinational forces conducted a month-long intensive round-the-clock aerial bombardment of Iraqi targets. The Iraqi air defense system and main airfields were disabled in the first hours of the war and were unable to mount any significant resistance to the aviation of the multinational forces. The adjoining waters were controlled completely by the coalition forces.

Nevertheless, the destruction of Iraqi mobile tactical missile launchers was not as effective as anticipated as a result of such elementary precautions as dispersal, concealment, and camouflage. Generally, the effectiveness of the advanced weapons systems fell well short of what was depicted in the US publicity campaign. The Tomahawk SLCMs hit only 50 percent of their targets, bombs dropped by the F-117 "Stealth" aircraft destroyed less than 80 percent of their targets, and anti-aircraft Patriot missiles intercepted only 28 percent of the obsolete Scud missiles launched.<sup>42</sup>

Iraq did succeed in launching a considerable number of its missiles, many of which penetrated the tactical ABM defense systems and delivered their warheads to the target areas. After the war Iraq still retained a large stockpile of missiles. If even a few of these had been armed with nuclear warheads, operation Desert Storm would have ended in disaster for the coalition forces, the neighboring countries, and, of course, for Iraq itself.

Even from a purely theoretical military point of view, the scenario of protracted conventional air strikes against Russian strategic forces appears rather dubious. There are only a few areas in Russia where land-mobile ICBMs are deployed (Yurya, Nizhniy Tagil, Novosibirsk, Kansk, Irkutsk), though their numbers are likely to increase. All

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42. *The Economist*, 5 September 1992, 12.



mobile ICBMs, as well as the silo-based missile sites, are located in the depth of the continent, at considerable distances from the Russian frontiers, and are well protected by air defense systems. Many of these regions are well beyond the effective, operational range of US tactical aviation and SLCMs.

On this note, it seems that the combat radius of NATO tactical aircraft with weapon loads of 4,000–6,000 pounds (and in the case of the F-111's 10,000-pound weapon load) seems overstated in Russian military forecasts by at least two or three times. Heavy bombers would have to execute their missions without fighter escorts while facing Russian area and site air defense missile batteries, air defense, and air force fighters operating over their own territory.

NATO will not be able to rely on an air and sea superiority comparable to that enjoyed in the 1991 war. In order to destroy even a portion of the Russian ICBMs, the United States would have to mount an operation far greater than Desert Storm in geographic scale, forces and assets, and preparation time. This would give Russia time to take political and military counteraction. The US fleet, bases, and nuclear installations on the territories of its allies in Europe and the Far East (without whom such an operation would, in any case, be infeasible) would become legitimate targets for Russian conventional retaliatory strikes. In reality, any attack on Russian ICBMs would begin a protracted non-nuclear war of global dimensions, in which the West would have to live with the constant expectation of a Russian strategic missile strike.

The ongoing revision of US and allied strategy, military planning, and military structure (including the planned reductions and redeployments of the armed forces) gives little reason for believing that such military scenarios are being contemplated seriously. Still, the Russian military's concerns should be taken seriously, since they affect Moscow's threat perceptions, operational planning (including the delegation of ICBM launch authority during conventional warfare stages), weapons programs, and arms control assessments. These concerns could properly be addressed by the United States and NATO in official statements on defense, strategy, and force posture. Additionally, this is an issue to keep in mind during the discussions whether to extend NATO membership to the states of Eastern Europe.

Additional US data are needed on important matters, particularly the numbers, combat radius, and weapons loading of planned air forces. Within a framework of consultations on military doctrine, it might be worthwhile for Russia and the United States to agree that any attack, including a deliberate non-nuclear strike against strategic weapons, would be considered the equivalent of a nuclear attack with all its ensuing consequences. This follows logically, moreover, from the fact that the effects of such a strike are unpredictable and could result in the accidental explosion of nuclear warheads and the radioactive contamination of wide areas. Finally, additional conventional force reductions and limitations, including some on air force and naval strike aircraft, would help to alleviate Russian concerns.



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## Implications for Command and Control Systems

The signing of the START II Treaty heightens the problems of command and control over nuclear weapons and their role in ensuring strategic stability. Command-control-communications and intelligence (C<sup>3</sup>I) systems are an extensive complex of institutions, procedures, and technical assets that assure early warning of an attack, decision making, and implementation of retaliatory action. It comprises the early-warning system (EWS), intelligence processing and assessment systems, command and control institutions, and political leadership and military high command posts, devices and regulations for weapons control, and the launch order transmission systems.

The United States consistently emphasized command and control systems in its assessments or forecasts of strategic stability during the 1980s.<sup>43</sup> In Russia much of the research on this subject remains classified, but open publications include studies carried out by the Institute of World Economy and International Relations of the Russian Academy of Sciences and the Center for Operational Strategic Studies of the General Staff.<sup>44</sup>

In spite of the attention given to this issue on a theoretical level, however, serious consideration of command and control systems has yet to be taken into account by nuclear arms control measures. The impact of the command-control systems has always been a taboo topic at the START talks. The balance of mutual deterrence is estimated only from quantitative and qualitative assessments of the nuclear forces themselves.

Such an approach may have been justified during the early stages of the arms control process when force levels and capabilities were excessive. At the present time, however, when both parties have already agreed on deep cuts and are contemplating even more radical further steps, a consistent and well-considered account of the roles and capabilities of the command-control systems is needed.

The United States enters the era of START reductions with sophisticated and elaborate command and control systems. The leadership of the country, beginning with the tenure of Defense Secretary Robert McNamara in the early 1960s, has focused much of its attention on these systems, spending about 10 to 12 percent of the annual strategic forces budget to improve and modernize their capabilities. Two fundamental US priorities have emerged in this area.

First, the United States has always sought to ensure that reliable political control is exercised over the command and control of nuclear weapons. A clearly defined system of decision making has been established for their employment. The successors to the

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43. See B. Blair, *Strategic Command and Control* (Washington, D.C.: Brookings Institution, 1985); A. Carter, J. Steinbrunner, and C. Zraket, *Managing Nuclear Operations* (Washington, D.C.: Brookings Institution, 1987).

44. See A. Arbatov, A. Savelyev, "The Command and Control Systems as a Factor in the Strategic Balance," in *MEMO Yearbook* (Moscow: APN, 1987): 301-28; V. Yarynich, "Command and Control Aspects of Nuclear Security," in *Ways to Security*, (Peace Institute, RAS, 1992), 51-8.

president, and the order in which powers are delegated to them in case of the president's demise or absence, are well known and fixed by law. The president and his aides regularly practice drills of such actions in crisis scenarios.

Decisions about command and control are not limited to the highest national authorities. Rather, Congress and the academic community play an active role. Regular hearings are held on various aspects of the subject with numerous military and civilian experts in attendance, and the documents of these hearings are made widely accessible to the public. Shortcomings in the system and possible remedies are openly discussed in the press. The open debate and widespread dissemination of information facilitates, though does not guarantee, timely correction of problems and elaboration of optimal solutions by the government on such an important question. Such solutions rely on the support of informed public opinion and political circles, ensuring adequate funds and continuity despite changes of administration.

The second fundamental US priority has been to ensure that the functioning speed and survivability of the command-control systems are not inferior to those of the nuclear weapons themselves. Due to purposeful efforts by the country's leadership, the current US C3I system ensures the control of nuclear weapons in virtually any possible scenario with a considerable degree of reliability. The global network of early-warning radar stations covers all possible nuclear attack routes, including the North Pole and the Atlantic and Pacific oceans. The constellations of satellites in geostationary orbit ensure the immediate detection of a nuclear launch. The effectiveness of these systems was confirmed by the fact that almost every Scud launch during the war in the Persian Gulf was immediately detected, making it possible to pass timely warning signals to Israel and Saudi Arabia.

Russian experts believe that the US EWS currently retains a high capability of ensuring a launch-on-warning strike, in spite of the problems noted by US critics. US strategy, however, is oriented toward a delayed retaliatory strike or a rapid "launch under attack" after confirmation of nuclear explosions on US territory. Even in such critical conditions, the US command and control systems are believed to be likely to survive. The main Global Operational Command System is based on a countrywide cable network with automatic switchboards at main relay points. This network is duplicated by a series of reserve systems using airborne command posts, a ground-based network of long-wave communication channels (GWEN), backup 494L command missile systems (based on Minuteman-II ICBMs), and other measures.

Great importance is attached to the reliable control of sea-based forces. For this purpose, units of radio-relay aircraft transmitting at ultra-long-wave range (of the Tacamo type) are deployed over the Atlantic and Pacific oceans, in addition to the centrally controlled network of powerful shore-based ultra-low-frequency and low-frequency radio transmitters dispersed around the world. Such control of SSBNs makes it possible to rely with considerable certainty on their use for a delayed retaliatory strike. All three legs of the US triad also rely on satellite communication systems, tying ground- and air-based command centers, early-warning satellites and radars, and the actual forces into a highly reliable, redundant, and integrated system.

In contrast, the corresponding situation in Russia, as seen through available information, appears far from satisfactory. Implementation of START II may even create additional problems for the command and control capabilities.

As far as political control over nuclear weapons is concerned, two significant deficiencies are immediately apparent. The first is a complete lack of involvement by the Russian parliament and public in the policy-making process. The second is a lack of clarity in the national political leadership's control over nuclear weapons employment. There are, indeed, no generally accessible documents currently available on this state of affairs (which, by its very nature, should not be kept secret). The same paucity of information applies to such questions as who is really empowered to authorize the launching of missiles (the president, the minister of defense, or the General Staff)? Who are the successors to the President and in what order? Is there a procedure to delegate authority to the armed forces, and what is its legal status? Added to these questions are complications and uncertainties associated with the control of nuclear weapons in Ukraine, and ambiguous arrangements for a collective decision of the four CIS leaders on nuclear weapon employment (as postulated in CIS agreements in December 1991).

The potential effects of START II may introduce yet another problem. Until very recently, the primary retaliation plan of the Strategic Rocket Forces was a launch-on-warning strike. The military-technical characteristics of the command-control system were geared to this concept. More importantly, the structure of the command and control system and the force requirements in terms of numbers and characteristics of weapons systems were all based on this concept. (Interestingly enough, the second-strike concept in Moscow's strategy has been, and remains, synonymous to the US launch-under-attack approach.)

Events of recent years, including the breakup of the Soviet Union and the rapid progress in nuclear arms cuts, have overtaken this policy. Nowadays, the most probable contingency plan would be a limited retaliatory strike. There is simply not enough time to implement a launch-on-warning option. Even with a perfectly operating early-warning system, speedy calculations by the command posts, and smooth operation of the communication system, the political leadership will have no more than two to three minutes to reach a decision. Furthermore, at least until the implementation of the Lisbon Protocol, in those few extraordinary minutes, the president of Russia is supposed to consult with the leaders of Ukraine, Belarus, and Kazakhstan.

The primary leg of the US triad consists of submarines and SLBMs, and as a result of START II, the roles and capabilities of the sea-based missile forces will likely grow in the future. Theoretically, these vessels could operate close to Russian territory, thereby shortening flight and warning times to a minimum, and leaving no time at all for Russian authorities to make a decision. Actual early warning and decision-making time would overlap with missile flight time and warhead explosions. In order to conduct a timely LOW response, the nuclear employment sequence would have to be short-circuited to a "warning-launch" option, thereby excluding an actual political decision.

Furthermore, the premise that the early-warning system would operate perfectly is highly questionable. Five of the eight modern phased array missile attack early-warning radars of the former USSR are now situated outside Russia's borders in adjoining

sovereign republics. In a critical moment, it is uncertain whether reliable and timely information would be received in order to form the basis for a strategic decision. The condition of the space-based early-warning satellites is even more questionable. Experts believe that these satellites, having been designed primarily to survey US territory, may experience some difficulty in detecting the missile launches from oceans close to Russian shores. Moreover, they warn only of the occurrence of an actual launch without details on the national origin of SSBNs, the direction, or scale of the strike. The new generation of early-warning satellites have a broader monitoring area, but are more prone to give false alarms. It would be irresponsible to rely exclusively on the new space systems to sanction a retaliatory strike.

The ability to retaliate depends entirely on the survival of the "brain" of the command and control system (i.e., of its highest echelons, including the headquarters of the political leadership and the command posts of the General Staff). At present, none of the command posts of the highest echelons in Russia could reliably survive a nuclear strike and retain the capability to transmit orders for retaliation. This is a consequence of the one-sided Soviet strategy, which relied exclusively on the launch-on-warning principle. Another facet of the problem is the preplanned scale of a retaliatory strike. Currently, the scale of an envisioned strike is still immense due to the numbers and yields of the strategic forces (to a large degree composed of land-based MIRVed ICBMs, primarily heavy SS-18 missiles). Even severe degradation of the C<sup>3</sup>I system would preclude the use of a small portion of ICBMs, which, because of their initial warhead numbers, still retain a devastating absolute damage potential.

This situation may be altered by the year 2003. The sea-based missile forces, which under START II will become a proportionally larger element of the triad (50 percent by number of warheads), currently possess only an uncertain retaliatory capability. Apparently, the ultra-long-wave radio transmitting stations located on Russian territory are the only communication links for the transmission of orders to deeply submerged submarines. These ground-based installations, with their cumbersome external antennas, are extremely vulnerable to nuclear and conventional strikes. Russia lacks a fully deployed system of radio-relay aircraft comparable to the US Tacoma system. Space communication links depend on the survival of ground-control stations (which are also vulnerable to nuclear and conventional strikes) and might compromise the location of SSBNs in waters controlled by hostile ASW forces.

START II might therefore lead to paradoxical consequences. On the one hand, the fixed ICBMs have always been the most modern and reliable of the strategic forces in command and control capabilities, but they are precisely the systems now subject to radical reductions. On the other hand, the sea-based forces, which will acquire a much greater role after START implementation, are equipped with the poorest command and control facilities. For this reason, the actual scale of Russian deterrent capability after the year 2003 may be much lower than the numerical levels of its forces under START II would suggest.

This situation is not a consequence of START II, but rather of the decades of shortsighted military policies and the ill-founded strategic and operational planning of the former Soviet leadership. The solution is not to reject the treaty, but rather to revise strategic posture, operational planning, target lists, and traditional neglect of the C<sup>3</sup>I

systems in budget allocations. They should be made adequate to the new political realities, threat assessment, force levels and structure, and new political and constitutional system in Russia (implying the need for particularly strong political control over nuclear weapons employment).

This would entail restructuring and improving the warning and command systems. Even after shifting to the concept of a delayed second strike, the data supplied by the early-warning systems would in no way lose their importance. Such information is still needed to speed preparations for retaliatory action, to organize protective measures against the incoming strike (including the dispersal of nuclear weapons and command and control systems), and to identify the initiator of the attack.

In order to ensure the participation of the bulk of the existing forces in the deterrent role, it is essential to improve the command and control systems, particularly those of the sea-based missile forces and land-mobile ICBMs. Given the current situation in Russia, it would be wrong to delegate the technical authority to use nuclear weapons to submarine crews on patrol. The only solution remains the technical improvement of the SSBN control system and the development of new, more survivable communication systems, all of which will take years of development and will require considerable outlays. This system should rely on super-hardened command and communication facilities and redundant survivable relay systems, providing a reliable integrated control network for all three legs of the triad.

It would be advisable to begin a dialogue between Russian and US experts on this subject. This will be essential, since accounting for the C<sup>3</sup>I factor may seriously affect mutual assessments of strategic stability, the roles of various weapon systems, and future decisions on reductions in the strategic offensive forces. The mutual advantages to be derived from cooperation and joint research into the problems of nuclear security could be considerable. One primary benefit may be to enable greater possible reductions in force levels by ensuring more highly effective and survivable command and control systems than would otherwise have been possible. Insofar as expenditure on C<sup>3</sup>I and on nuclear weapons themselves are commensurate, the economic savings over a period of decades might be substantial as well.

Recently, the United States and Russia began discussions on the so-called zero alert option. Clearly, this is the product of a mutual desire to transform the strategic relations based on nuclear confrontation, while recognizing that physically eliminating large numbers of weapons would require decades and great expenditures. In this regard some proposals, like removing missile flight programs from on-board computers or retargeting them away from each other, seem technically unsound, unverifiable, and easily reversible. Such suggestions may lead instead to mistrust and uncertainty. Other proposals, however, retain considerable merit.

The most easily verifiable and strategically tangible way to lower the alert rate of forces is to remove missile warheads and store them away from bases at central storage sites under a proper monitoring system. Additional ICBM components could be "decapitated" along with the warheads and stored at base depots (if storage space is sufficient). This would, however, require more intrusive verification, either by inspectors at the bases or with sophisticated sealing and remote monitoring devices. Similar procedures

could be applied to bombers and bomber weapons. With regard to SLBMs, removing their warheads would make SSBN patrols senseless. It might be advisable, however, to agree on reduced patrol rates (also leading to additional savings), and to keep a major portion of the SSBN force in ports with their missiles (or warheads) removed to storage and maintenance facilities.

Other steps might enhance the survivability of C<sup>3</sup>I systems under future lower force levels and relaxed alert postures. These might include banning SLBM tests with depressed trajectories and prohibiting tests and deployment of space- or land-based anti-satellite interceptors. In addition, limiting the number of permanently deployed reconnaissance satellites (of the US Lacrosse type) would enhance the survivability of land-mobile missiles. Detection of a larger than agreed number of these orbiting satellites would serve as an additional early-warning indication to alert strategic forces and C<sup>3</sup>I systems.



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## Russian Domestic Debates over START II

The US Constitution requires the president to obtain the “advice and consent” of the Senate by a qualified majority of two thirds of the votes of the senators present for the ratification of international treaties. Juridically, this is achieved by a vote on a resolution on ratification that has been developed and submitted to the Senate by the Foreign Relations Committee. The Senate may then approve or reject the treaty, as well as introduce conditions that have force only for the United States. However imperfect and sometimes frustrating it may seem in practical implementation, this process is the major guarantee of public control (via the legislature) over the policy-making authority of the executive branch and its huge federal bureaucracy.

By contrast, the Constitution of the USSR entrusted the ratification of international treaties to the Presidium of the Supreme Soviet. Decisions on the ratification of important international agreements were enshrined in the decrees of the Presidium and, in practice, were a pure formality. They were prepared behind closed doors, without any preliminary public hearings or discussion in the media or academic community. Thus, the influence of the legislature on Soviet foreign policy was minimal, limited primarily to the role of providing unquestioning support for senior state and party functionaries exercising executive power. This applied especially with regard to the treaties on disarmament and arms control.

This situation began to change in 1991. The US government was interested in a quick implementation of START I and had submitted it for ratification by the end of the year. Given the circumstances associated with the breakup of the Soviet Union, however, the prospects for ratification in the USSR were dimming, especially after the August 1991 coup d'état attempt and the ensuing collapse of the Soviet state.

The formation of the CIS raised questions about treaty obligations of the Soviet successor states. Nonetheless, the Declaration of the Heads of State of the Republics of Belarus, Russia, and Ukraine immediately after the establishment of the Commonwealth sought to reassure the international community of the CIS's intention to abide by START I.<sup>45</sup>

START I was ratified in Russia on November 4, 1992.<sup>46</sup> Before the debates on ratification even began, it was already known that, in June of that year, the presidents of Russia and the United States had already signed a framework agreement on even more radical cuts (later embodied in the START II Treaty). The congressional deputies shifted their attention and criticism to the new US-Russian agreement. These circumstances assured the START I Treaty a relatively easy passage through the Russian parliament. In the resolution of the Supreme Soviet issued in connection with the ratification of the treaty, conditions for its implementation were stipulated.

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45. *Izvestia*, 9 December 1991.

46. *Nezavisimaya Gazeta*, 5 November 1992.

As mentioned above, START II is, in many respects, an extension of START I. The link between them is indirectly reflected in the text of START II, which stipulated that START II would enter into force on the day that the instruments of ratification were exchanged, but not until START I enters its implementation phase.<sup>47</sup> This made it necessary for the "nuclear" republics of the former USSR to complete the START I ratification process as quickly as possible.

The evolving Russian-Ukrainian relations, along with Kiev's objections to, and interpretation of the ratification of START I, the Lisbon Protocol, and the NPT, have all become major obstacles to the ratification of START II. It would be wrong, however, to consider the Ukrainian position as the only, or even primary, obstacle to START II ratification.

Another obstacle has been that serious opposition by leading figures of the parliamentary bloc "Russian Unity," and by a number of centrist factions, has been mounted in the Russian Supreme Soviet since the end of 1992. A series of articles in the press by leaders of this bloc, rejecting START II as an "act of treason" by the Yeltsin administration, provide eloquent evidence of this opposition. In the words of Deputy Mikhail Astafiev, "the speed with which the treaty was concluded and the personalities involved in the last stage of its elaboration call for caution." Another right-wing opposition leader, Sergei Baburin, expressed the opinion that "any agreements on arms reductions can only be ratified after the foreign policy course and the military doctrine of Russia have been laid down."<sup>48</sup>

Against a background of growing confrontation between the legislative and executive powers, opposition to START II in the Russian parliament has been inspired not only by the treaty's substance, but also by an outright rejection of the domestic and foreign policies of the president of the Russian Federation. The ratification process of START II has become a forum for the struggle against the president and his administration over a broad spectrum of political issues.

The current domestic political conflicts are naturally closely intertwined with foreign policy uncertainties. They stem predominantly from the transitional nature of the current political situation in Russia, which began with the ascent of Mikhail Gorbachev in April 1985, continued with Boris Yeltsin's victory in August 1991, and has entered a stage of continuous political turmoil since December 1992.

Even before the constitutional crises between the president and parliament emerged in December 1992 and again in March 1993, serious political dissent on the issue had developed. Foreign policy had become one of the major issues of domestic politics, and moderate liberals were pushed aside in debates by new moderate-conservatives and hard-liners, the former having split from the United Democratic Front and the latter having recovered from their August 1991 defeat.

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47. *Izvestia*, 5 January 1993.

48. *Moscow News*, 17 January 1993, N3.

In late 1992 a massive attack was prepared against the START II Treaty signed in January by Presidents Yeltsin and Bush. In the media the treaty had been widely discussed by journalists, academics, retired military officers, members of the government, and representatives of various parties and public organizations. The official position of the representatives of the Ministry of Foreign Affairs and the Ministry of Defense unconditionally supporting the treaty was put forward and subjected to critical analysis by independent experts and academic centers.

Foreign policy formulation during such a period is not merely an object of contention between conflicting political factions, but actually becomes a victim to bitter infighting among rival forces of society. For these opposing forces, foreign policy positions serve as a useful lever in their plans to alter the political and economic systems of the country, and are rarely based on sober analyses of the country's domestic and international status.

Serious deficiencies in Russian foreign policy making in 1992-93 did little to alleviate the problem. In its dealings with the West, for example, the Russian government seemed to enact a never-ending sequence of unilateral concessions. Prompted by certain sections of the academic community, even such controversial concepts as joining NATO and participating in SDI found their way into official Russian policy.<sup>49</sup> Russian foreign policy, characterized as the "diplomacy of smiles" and the "policy of yes," became a favorite target of the right-wing opposition, which attacked the Foreign Ministry for "selling out" Russian interests to the West.

Also, at that time the lack of any substantial domestic support for Yeltsin's policies also contributed to the difficulties experienced in foreign policy formulation. Furthermore, during the crucial formulation phases of the new policy, the administration was uninterested in obtaining comprehensive and consistent analyses of major policy issues and involving experts from the Academy of Sciences and the new independent think tanks and foundations, although such efforts were commonplace during the Shevardnadze period.

The critics, on the whole, fall into two principal groups. One group stresses that START II is completely unacceptable for Russia. They argue, in particular, that the envisaged elimination of the principal component of the Russian SOF—the MIRVed ICBMs—would undermine national security, put an end to strategic parity, and give the US military unquestionable superiority, since the main components of its strategic forces are not similarly limited. This group also emphasizes that the reductions of former Soviet nuclear arsenal, together with the necessary restructuring of the SOF, would require enormous expenditures, which Russia cannot afford in its current serious economic crisis.<sup>50</sup>

The other group of critics, while refraining from questioning START II's fundamental principles, focuses its criticism on specific aspects of the treaty (most of which have been addressed in this study). The shortcomings and omissions, in their opinion,

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49. A. Savaliev, "Once Again About SDI and Free Lunches," *Nezavisimaya Gazeta*, 24 March 1992, 2.

50. "Vek," *Pravda*, 22-29 January and 11 February 1993.

should not serve as a pretext for postponing or rejecting ratification, but rather should provide incentive to begin, even before START II ratification, a new round of negotiations with the Clinton administration on additional measures with respect to strategic forces. These critics argue that a precedent for this already exists, since ratification of START I overlapped with negotiations on START II and implementation periods of both treaties would also overlap significantly. Additional agreements with the United States on the reduction and limitation of strategic weapons, according to these critics, might "correct and deepen START II and find embodiment in a new treaty".<sup>51</sup>

At the beginning of the hearings on START II in February and March 1993, the Supreme Soviet Committees on International Affairs and External Economic Relations, as well as on Defense and National Security, sent a message to the corresponding committees of the US Senate expressing their readiness to meet with their counterparts in order to clarify understandings on the reduction and limitation of strategic offensive arms. They renewed an earlier proposal to hold, in the course of the ratification process, joint US-Russian hearings on all aspects of the treaty. The message also proposed to discuss a number of possible additional obligations by both sides, within the framework of the START II Treaty. In particular, both sides might reduce the number of warheads to levels comparable to those of the other nuclear powers by the years 2005 to 2010. The United States and Russia could also jointly adopt a resolution on continued strict compliance with the 1972 ABM Treaty.<sup>52</sup>

Nevertheless, most of the members of the Committee on International Affairs, led by hard-line deputy chairman Andronov, have argued against the treaty. Their spontaneous and ill prepared attack was thwarted by Foreign Ministry and Defense Ministry officials and experts from the academic community. It was significant that, when push came to shove, moderate critics of the treaty unequivocally supported its ratification, withholding their criticism in the interest of making progress. The strategic, economic, and technical objections of the opposition were easily torn apart.

After this first setback, the opponents of the treaty regrouped and used the long spring-summer break in hearings, caused by the constitutional crises, to prepare for a new round of attacks. They created an advisory committee of conservative defense-industrial managers, technical experts, and retired military personnel to elaborate arguments against START II. The major arguments are as follows.

First, START II envisages the restructuring of Russian forces along the lines of the US triad, which runs against the geostrategic and technical peculiarities of Soviet and Russian strategic postures. Silo-based MIRVed ICBMs are the most stabilizing retaliatory weapon systems, as their launch may be detected by early-warning systems within minutes and their 30- to 50-minute flight times give the other side an opportunity to initiate a LOW retaliatory strike. By contrast, SLBMs launched from adjacent seas, with their shorter flight times, effectively deny this capability. Furthermore, Russian SSBNs are 10 to 60 times noisier than US SSBNs, and upon egress out of Kamchatka through

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51. *Novoye Vremya*, January 1993, 27.

52. *Rossiiskaya Gazeta*, 12 February 1993.

the North Cape-Bear Island-Spitsbergen line, or through the Kuril chain, they are immediately and accurately detected by the US SOSUS acoustic system, becoming easy targets for Western ASW forces. It would require 20 years and extraordinary expenditures to develop stealthier one-hull designs to replace the current double-hull-constructed SSBNs. The remainder of the Russian fleet is technically deficient, due to the irresponsible procurement policy of Admiral Chernavin, and is unable to support and defend Russian SSBNs. Moreover, Russian bombers are obsolete and lack sufficient forward bases and tanker aircraft. The 15 most modern TU-15 airplanes are lying idle in Ukraine.<sup>53</sup>

The second primary argument put forth by opponents of START II is that the treaty incorporates only a dubious commitment to the 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 SDI's technical legacy, while Russia, for economic reasons, will be unable to follow suit. The heavy SS-18 ICBMs, traditionally the most effective at penetrating ABM defenses, would be eliminated under the new treaty. Their removal made it feasible for the United States to freeze the SDI program. The SS 18 missiles are invulnerable to conventional precision-guided weapons (due to their inland location and hardened sites) and to nuclear strikes (due to their high LOW capability). Mobile ICBMs, however, are less powerful, hard to launch in salvo, much more expensive to procure and maintain, and environmentally hazardous in transport accidents. They are easy to track with KH-11 and Lacrosse satellites and vulnerable to conventional and nuclear strikes. SSBNs cannot launch missiles in salvo, and SLBMs are easily intercepted by space- and land-based defenses.<sup>54</sup>

Third, reductions are to be implemented largely by downloading US missiles and bombers, and by eliminating Russian ICBMs, primarily heavy ICBMs. Downloaded Trident-I, Trident-II, Minuteman-III warheads and Peacekeeper ICBMs will be put in storage instead of dismantled and eliminated. Russian warheads are to be dismantled, with their fissile material removed and reutilized (with US help). If Russia is to eliminate its warheads, it should do so on its own, with the reciprocal elimination of US downloaded warheads under mutual control.

Specific downloading provisions favor the United States and provide it with a potential superiority in break-out capability through illegal uploading of missiles. For example, if the United States were to withdraw from START II, it could then quickly upload its deployed missiles to 4,956 warheads, a level higher than that envisaged by the START I missile warhead ceiling (4,900). If Peacekeeper ICBMs are returned from storage to operational bases, this level could rise to 5,306 warheads, and with deployed bomber weapons it could even rise to 6,570 warheads (when counted by START I rules). This is higher than the START I ceiling of 6,000. START II is even more advantageous to the United States. The US break-out potential is enhanced by its 95 B-1B modern heavy bombers, reconvertible to nuclear missions (1,520 weapons), and 4,000 long-range nuclear SLCMs,

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53. Colonel Dmitriev (ret.) and Captain, 1st Rank Melkov (ret.), "To Exit and Never to Enter Again," *Den*, 25 April to 1 May 1993, 3-4.

54. Lieutenant Colonel Ivanov, "Defensive Consciousness," *Den*, 25 April to 1 May 1993, 4.

which may be returned from storage to ships and submarines, and by the nuclear force modernization of its allies, Britain and France.

Russian break-out potential as a result of START II would be only 525 warheads on SS-19 ICBMs (which will be obsolete by 2003) and 200 SLCMs. The unequal break-out capability would look as follows, according to each phase of the START II implementation period:

- After the first phase: Russia, 6,206 warheads; United States, 8,450 (for a ratio of 1:1.36, and 1:1.97 in SLCMs);
- After the second phase: Russia, 4,750; United States, 7,694 (for a ratio of 1:1.62, and 1:2.4 in SLCMs).

This would provide the United States with a clear-cut superiority and an absolute advantage with regard to START and ABM limitations, as well as in its general relations with Russia.<sup>55</sup>

The conservative committee and its parliamentary allies seek to reject START II and abandon START I by 2003 (in accordance with the withdrawal terms) in order to procure and deploy the new generation of heavy ICBMs. In spite of the breakdown of industrial cooperation with Ukraine, they believe that development, testing, and production of the SS-18 follow-on can be accomplished in 10 years by concentrating Russian resources on this weapon system.<sup>56</sup>

It is clear that the prospects for START II ratification will be affected significantly by the general evolution of Russian domestic politics in the near future, as well as by the state of US-Russian relations and cooperation. Nevertheless, even a reelected parliament would subject the treaty to close scrutiny, and the above-mentioned objections would be given the utmost attention. The growing nationalistic mood in the media, within the military, and in public opinion at large, in reaction to domestic economic failures, social disorder, and perceived foreign policy humiliations, will not make ratification any easier.

The START II process to date contains an important lesson for the new Russian leadership. It should recognize the need to involve the parliament in the negotiation process, hold regular briefings for the deputies on its development, and take their views and proposals into account at all stages of the negotiations. Though this would restrict, to some extent, the administration's freedom to maneuver, it would provide a broader political foundation for its arms control and military policies, prevent hasty decisions based on narrow departmental interests, and facilitate the ratification process.

Another important conclusion to be drawn from this example is that a lot will depend on US policies. The worst US policy would be to passively rely on Yeltsin's influence and devotion to the improvement of relations. The proposal by the Russian parliamentarians to hold joint hearings might be very useful if they are well prepared and properly attended. Inter-parliamentary cooperation (on a committee level, at first)

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55. "To Exit and Never To Enter Again."

56. Ibid.

on the ratification of START II, together with other forms of cooperation (joint seminars, reports, and declarations), could contribute to the process of working out a common approach to the new US-Russian strategic relationship.

These steps alone, however, are insufficient, especially in light of the unequivocal support provided to Yeltsin by the US government and Congress in his confrontation with the Russian parliament and Constitutional Court. New agreements are needed to resolve some of the real problems of the treaty, and US actions and policy statements would be helpful to counter the objections of the treaty's opponents and reassure those who are concerned by its apparent inequities.





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## Conclusion

There is no doubt that, as a whole, the START II Treaty represents a great step in the right direction. The main value of the treaty with respect to strategic relations between Moscow and Washington lies in the fact that it significantly lowers the counterforce disarming capabilities of both sides and radically cuts nuclear weapons, while preserving forces adequate for a retaliatory strike.

In general, START II does not conflict with the task of restructuring the strategic forces of the former Soviet Union in keeping with the new strategic, political, and economic realities facing Russia. Moreover, in a number of ways, START II makes it possible to execute the restructuring process at less cost and under more favorable strategic conditions than would otherwise be possible.

At the same time, the treaty is not devoid of shortcomings and questionable terms. In many ways, it could have reduced US and Russian expenditures further and could have led to greater stability in the strategic relationship between the two powers.

As with any treaty of this kind, START II is the result of a compromise between the interests of the two states and reflects a wider state of their political relations. Bearing all factors in mind, the virtues of START II clearly outweigh its shortcomings. Its ratification by both sides would open the way to further limits and cuts of strategic forces. At the same time, some complementary measures between the two powers might help smooth the ratification and implementation of the treaty. START II is itself a precedent for this in that it further developed and deepened the START I Treaty, with which it overlaps in its implementation and provisions. Following this example, additional measures could be included in supplemental agreements, the implementation of which could partly overlap with the START II timetable.

First of all, the sides could agree on the complete removal of warheads from a large portion of ICBMs and some SLBMs (with the decommissioning of older boats) already earmarked for retirement or elimination under START II. Together with the majority of the armaments of heavy bombers, the missile warheads might be stored in central depots under mutual control. Such measures, by defusing the problem of weapons outside Russia, would remove the dangerous possibility of a disintegration of the Soviet nuclear legacy and would contribute to the non-proliferation of nuclear weapons.

These new methods of arms reductions would be most relevant to the innovative agreements to lower the alert rates of strategic forces and introduce more transparency and interdependence in their maintenance and operations. Reduced SSBN patrol rates, agreements to ban testing SLBMs with depressed trajectories, and bans on anti-satellite weapons would enhance the integrity and survivability of C<sup>3</sup>I systems in times of peace.

In view of the large accumulation of warheads at storage sites and in order to exclude the possibility of their rapid uploading back onto delivery vehicles, new and important subjects for negotiation could be introduced in the near future: agreements to stop the production of uranium and plutonium for military purposes, and cooperation on the safe transportation, controlled storage, and dismantlement of nuclear munitions.

This new avenue of negotiations would also constitute an important contribution to the non-proliferation of nuclear weapons.

In particular, official US data on the number of W-88 warheads produced and on manufacturing plans and warhead capabilities would be a significant first step in initiating the exchange of sensitive information between the two sides. Reciprocal monitoring of the dismantlement and reprocessing of downloaded warheads and bomber weapons and elimination of long-range nuclear SLCMs would also help start the process.

At the new round of regular START III talks, the parties could agree to lower the aggregate ceiling on the strategic forces of each side to 2,000-2,500 warheads. This would be in keeping with the present state of relations and would allow Russia to reduce the costs and scale of its planned modernization and weapons deployment programs. Both Russia and the United States could abandon the nuclear triads altogether—anachronisms of the Cold War—retaining only two components by eliminating the airborne element. Favorable conditions could also be created for the other nuclear powers (primarily Britain and France) to join the arms reduction process. The new relationship between Russia and the United States makes it possible to elaborate a common understanding of the essence of strategic stability and to account for the factor of the command and control systems of strategic forces. New joint methods for assessing various weapon systems, different from the archaic linkage to their basing mode (ground-, sea-, or air-launched), are in order. These should be based on agreed assessments of survivability and counterforce capabilities, reliability of control systems and safeguards against unauthorized launch, and abandonment of the launch-on-warning operational concept.

In light of these more radical reductions, a strengthening of the inviolability of the ABM Treaty will also be necessary for stability. Agreements on the joint development of tactical ABM defense and early-warning systems would be worthwhile, but they require protocols of common understanding of the ABM Treaty articles to prevent its dilution by these systems.

In view of the increasing importance of the submarine component of the strategic forces, questions should be raised separately about limitations on anti-submarine warfare systems and operations in order to enhance the survivability of Russian submarine forces.

By providing data and official strategic statements, the United States could help the two sides to achieve a common understanding of the capabilities and employment plans of conventional air forces and their precision-guided systems. New agreements to reduce and limit these weapons would also help to alleviate Russia's concerns about the survivability of its forces after START II.

The new treaty, while representing a significant step forward in the process of reducing and limiting strategic weapons, should in no way be perceived as the final stage of the process. On the contrary, it should be viewed as the first phase of a new era in the strategic relationship between the great powers after the end of the Cold War. Its essence lies in the transition from marginal agreements, which legalized the programs and levels of strategic rivalry, to the elaboration of contractual measures for the joint management of strategic stability as an alternative to the unilateral buildup and enhancement of nuclear arsenals.

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## **The Center for Geopolitical and Military Forecasts**

The Center for Geopolitical and Military Forecasts (CGMF) is a non-government, non-profit research organization established in Moscow (Russian Federation) in autumn 1992. The principal task of the Center is to assist the executive and legislative authorities and the new political elite of the Russian Federation in the elaboration of fundamental national security, foreign policy, and defense strategy concepts, the development of effective civilian control over the military command and defense decision-making process, and the successful military reform and conversion of large sections of the defense industries.

The CGMF, through its studies and research, seeks to conduct a thorough evaluation of the geopolitical and strategic consequences of the breakup of the Soviet Union and the problems arising from the emergence, in its place, of new sovereign states. This is necessary, first and foremost, in order to adjust the national security policies of the republics (primarily, Russia, Ukraine, Belarus, and Kazakhstan) to the principles of peace and stability in Europe and Asia, as well as to the obligations assumed by the former USSR with respect to arms control and non-proliferation. An important new subject of research is conflict resolution as it applies to relations among the former Soviet republics. These new states are faced with similar internal tensions and controversies on sharing and dividing the military and economic assets of the former USSR. The CGMF also seeks to examine the potential role that multilateral negotiations and major international and regional institutions may have in preventing or resolving the conflicts and violence in this region.

The Center also carries out extensive research on security problems in the aftermath of the Cold War. Special attention is given to such themes as the non-proliferation of chemical and nuclear weapons, control over the transfer of missile technology, the regulation of the trade and transfers of weapons and military equipment, cooperation on the dismantling of nuclear weapons and their storage and conversion, new approaches to the reductions and limitations of strategic weapons and lowering their alert rates, the enhancement of strategic stability, transparency, and predictability, and multilateral efforts to repulse aggression and enforce and keep the peace in crisis regions. The CGMF is focusing on the reappraisal of the strategy, operational planning, weapons programs and deployment patterns of the armed forces of the major powers after the Cold War, as well as on the prospects for cooperation on early warning, crisis management, defense conversion, and mutual exchange and joint development of military technologies.

The Center has a small permanent staff, but it can call upon the expertise of many representatives of the Russian state and non-governmental institutions dealing with national security and defense policies. Due to its extensive contacts in the political and strategic communities of Russia, Ukraine, other republics of the former Soviet Union, major Western states, China, India, and other countries, the CGMF can rapidly and flexibly organize and manage several working groups unilateral Russian or joint multilateral research on virtually any subject connected to political, strategic, or technical

aspects of security. To provide solid and authoritative input, the CGMF invites experts from the Ministries of Foreign Affairs and Defense, the branches of the armed forces, the defense industry, and its research centers, as well as representatives of various parties, parliamentary committees, and academic institutes.

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